

“FINGERS GLITTERING ABOVE A KEYBOARD:”
THE KEYBOARD WORKS AND HYBRID CREATIVE PRACTICES OF
TRISTAN PERICH

A Dissertation
Presented to the Faculty of the Graduate School
of Cornell University
in Partial Fulfillment of the Requirements for the Degree of
Doctor of Musical Arts

by
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May 2019

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Cornell University, 2019

This dissertation examines the life and work of Tristan Perich, with a focus on his works for keyboard instruments. Developing an understanding of his creative practices and a familiarity with his aesthetic entails both a review of his personal narrative as well as its intersection with relevant musical, cultural, technological, and generational discourses. This study examines relevant groupings in music, art, and technology articulated to Perich and his body of work including dorkbot and the New Music Community, a term established to describe the generationally-inflected structural shifts in the field of contemporary music that emerged in New York City in the first several years of the twenty-first century. Perich’s one-bit electronics practice is explored, and its impact on his musical and artistic work is traced across multiple disciplines and a number of aesthetic, theoretical, and technical parameters. This dissertation also substantiates the centrality of the piano to Perich’s compositional process and to his broader aesthetic cosmology. A selection of his works for keyboard instruments are analyzed, and his unique approach to keyboard technique is contextualized in relation to traditional Minimalist piano techniques and his one-bit electronics practice.

BIOGRAPHICAL SKETCH

David Friend (b. 1983) grew up in southern Louisiana before moving to New York City to further his musical education. He received his bachelor's degree in 2005 and his master's degree in 2007, both from the Manhattan School of Music. His principal teachers have been Dorothy Sahlmann, Phillip Kawin, and Xak Bjerken, as well as Laurie Carney (chamber music), Anthony de Mare (extended techniques), Louis Bagger (harpsichord), and Carol Ann Aicher (pedagogy). He was also a fellow at the Bang on a Can Summer Music Festival (2007) and held the piano fellowship position in the Aspen Contemporary Ensemble at the Aspen Music Festival for three years (2008-2010).

As a pianist, Friend has primarily focused on chamber music and contemporary and experimental music. He is a founding member of several ensembles, including TRANSIT New Music, Grand Band piano sextet, Hotel Elefant, and Bent Duo. He is also a core member of Ensemble Signal and has performed regularly with a wide array of new music ensembles including the Bang on a Can All-Stars, Alarm Will Sound, International Contemporary Ensemble, and the American Composers Orchestra. He has performed at major venues around the world including Carnegie Hall, Lincoln Center, Royal Festival Hall (London), Disney Hall (Los Angeles), the Chan Centre (Vancouver), and the National Centre for the Performing Arts (Beijing), and for prominent festivals including Mostly Mozart (New York), Lincoln Center (New York), Bang on a Can Marathon (New York), Gilmore (Kalamazoo), Big Ears (Knoxville), Liquid Music (St. Paul), Next on Grand (Los Angeles), CTM (Berlin), and Beijing Modern Music Festival.

He has also frequently performed at underground and DIY spaces including Glasslands (New York), Betalevel (Los Angeles), Bread and Salt (San Diego), and Logos (Ghent).

Friend has premiered new works by scores of composers, including prominent voices of various generations and aesthetic affiliations such as Tristan Perich, Julia Wolfe, Samson Young, Missy Mazzoli, Daniel Wohl, Michael Gordon, Angélica Negrón, and Steve Reich. Friend's performances have been broadcast on radio and television in the United States and abroad, including for National Public Radio's *Performance Today*, Q2's *Hammered!*, and WNYC's *Fresh Sounds*. He has recorded albums for the New Amsterdam, Harmonia Mundi, Cedille, Innova, Albany, Naxos, a wave press, and Dacapo labels, and was featured on Third Coast Percussion's album of music by Steve Reich, which won the Grammy award for best chamber music performance in 2017.

*To Pat,
my number one omi-palone.*

ACKNOWLEDGEMENTS

A large number of people have helped make this dissertation—and, more broadly, my pursuit of a D.M.A. at Cornell—possible, and I express my sincere and lasting gratitude to all of them. I should start by thanking the Music Department at Cornell overall for taking a chance on a non-traditional graduate student with a busy performance schedule and for being supportive and adaptable throughout my time in the program. Xak Bjerken was an exceptional mentor, providing guidance in pianism while also helping me learn how to effectively manage a balance between a performance career and academic work. Thanks also to Lisa Moore for being an empathetic set of ears and providing sage advice when I was grappling with the decision of whether or not to go back to graduate school in the first place.

At Cornell, I benefited tremendously from the brilliant and attentive faculty members whose seminars I had the good fortune to participate in. These include Roger Moseley/Xak Bjerken, Benjamin Piekut, Kevin Ernste/Christopher Stark, David Yearsley, and Bonna Boettcher. The independent studies I pursued with Benjamin Piekut and the late Steven Stucky were meaningful experiences that helped me refine my scholarly interests and articulate them effectively. My teaching assistantships with Kevin Ernste and Annie Lewandowski both had a tremendous impact on my understanding and practice of music pedagogy and also allowed me to see the inner workings of master teachers at work. I must also express thanks to the stellar staff of the Sidney Cox Library of Music and Dance, who are such an important component of graduate

students' experience at Cornell and whose consummate efficacy was always matched with friendliness and genuine care. The staff of the Music Department, including Colette Larkin and Fumi Nagasaki-Pracel were vital advocates, who indefatigably helped me navigate administratively throughout my time at Cornell. I also must express a special thank you to the staff of the Herbert F. Johnson Museum, including Sara Ferguson and Sonja Elena Gandert for their openness to collaboration and the numerous opportunities I had to work on gratifying projects in conjunction with the museum.

My dissertation committee has been helpful, supportive, and infinitely patient. I appreciate their allowing me the space and time to find a way to approach my topic in a manner that resonated with me—both as a scholar and on a personal level, as a musician with direct connections to many of the topics, organizations, and individuals that are discussed in this study. I am also grateful for their encouragement to pursue this topic from the outset, and for helping me to navigate the complicated circumstances that pursuing it has sometimes entailed. Finally, their encouragement towards the end of this process was key to helping me to meet the final deadlines during a period of intense activity in my performance career.

I am also very grateful for the many people in my life not affiliated with Cornell who helped me, supported me, and cheered me on throughout my three years of coursework and the dissertation process. Most importantly, my partner Patrick Bradley has been endlessly understanding and giving, gracefully sharing the burdens of a disruptive schedule and long periods of separation while I pursued my coursework, and without whose bottomless compassion, perseverance, and kindness I surely would not have been able to make it through. I must also thank my family for being enthusiastic

about my return to graduate school, and especially my oldest sister, Christy Friend, for her help, advice, and encouragement through the application, coursework, and dissertation processes.

Much appreciation also goes to Bill Solomon for dissertation solidarity, to Ryan MacEvoy McCullough and Andrew Zhou for being great colleagues, to all of the other graduate students with whom I did my coursework and from whom I learned so much, and to everyone in Ensemble Signal for putting up with my dissertation-writing on rehearsal and performance breaks backstage at The Shed. Throughout this process, my wonderful friends, family, and colleagues have been unbelievably tolerant of my frequently impossible schedule and my often less-than-stellar efforts to stay in the loop about important life events, while consistently helping me navigate rough patches and what sometimes seemed to be impossibly thorny situations. I feel lucky to have so many amazing people in my life, and thank all of them for putting up with me. I owe many favors, and I genuinely look forward to repaying them.

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Machines epitomize process, yet always is there a sensitive membrane between the electronic and the physical, the abstract and the real. It is to either side of this divide that we can skirt, loitering in the conceptual, dallying in the concrete. They call “muscle memory” what our bodies do without our minds intervening, fingers glittering above a keyboard. Machines can only dream of mistakes. There, where perfection turns imperfect and the imperfect gains perfection, is where our logic ends and the other begins.

—Tristan Perich,
Prefatory Note, *qsqsqsqsqqqqqqqqq*

Introduction: Setting the Scene

The small, L-shaped room somewhere in the middle of the vast industrial behemoth of the Old American Can Factory in Gowanus, Brooklyn was packed to the gills on the night of March 18th, 2009. As part of the MATA¹ Interval Series, composer Angélica Negrón curated an evening of new music around the theme “music for toys.” Seated near the back of the cramped room, I heard Tristan Perich’s music for the first time. Not sure what to expect—in no small part because I was unable to see any of the performers or the “stage” (really, a patch of concrete floor) over the heads of the packed house on folding chairs in front of me—I was immediately riveted by the unexpected timbral punch of lo-fi electronic beeping interwoven with the riotous plinking of three toy pianos. While the evening was a feast of unusual and creative sounds (Judy Dunaway’s balloon music, Daniel Wohl’s virtuosic electro-acoustic chamber music, Margaret Leng Tan’s theatrical toy piano performance), Perich’s *qsqsqsqqqqqqqq* sounded bracingly fresh, and, unsurprisingly—or, perhaps, rather surprisingly, given its unconventional instrumentation—it has gone on to become one of his most frequently performed pieces of music.

While there was nothing remarkable about that particular night in the context of what was going on in the New Music scene in New York at the time, a snapshot of this particular evening serves as a useful point of departure for this dissertation. This is a

¹ Music At The Anthology, now commonly referred to as MATA, is a New York-based new music organization that presents and commissions contemporary music through a variety of initiatives. It was founded in 1996 by Philip Glass, Lisa Bielawa, and Eleonor Sandresky and derives its name from Anthology Film Archives, where its first concerts were staged.

dissertation about Tristan Perich, a unique and compelling artist whose work has not yet been the subject of substantial scholarship. However, to meaningfully wrap my arms around this topic, it would not suffice to narrowly focus only on Perich’s catalogue of works. I must define and explore the conditions of their creation and reception as well as my own relationship to the artist and his work. Looking back to that night at Issue Project Room in the Can Factory days, I am reminded that the story of music is always a story about *more than music*. In Jacques Attali’s estimation, “Music is more than an object of study: it is a way of perceiving the world. A tool of understanding.”² I believe that the inversion of this concept also holds true: the study of music must also be the study of the world, and by studying the world we develop the capacity to understand music. This dissertation will explore the work of Tristan Perich, with a special focus on his pieces for keyboard instruments, but in so doing—and necessarily so—will also investigate broader topics related to music, art, technology, politics, and culture.

My approach here is inspired in part by the recent work of musicologists such as Benjamin Piekut, who are incorporating aspects of Actor-Network Theory into their work, in the spirit of Bruno Latour. In Piekut’s book, *Experimentalism Otherwise*, which examines experimental music in the 1960s, he persuasively argues that investigating his topic requires conceiving of experimentalism as “the result of the combined labor of scholars, composers, critics, journalists, patrons, performers, venues, and the curative effects of discourses of race, gender, nation, and class.”³ As this dissertation unfolds,

² Jacques Attali, *Noise: The Political Economy of Music*, trans. Brian Massumi (Minneapolis: University of Minnesota Press, [1985] 2006), 4.

³ Benjamin Piekut, *Experimentalism Otherwise: The New York Avant-Garde and Its Limits* (Berkeley: University of California Press, 2011), 7.

Perich's music will be situated in relation to relevant material, aesthetic, and social groupings that simultaneously help to foster a more complete understanding of the work in question while also locating Perich as a participant in these interconnected narratives. In crafting this document, I do my best to heed Piekut's call for an understanding of Actor-Network Theory as a useful methodology that allows (and compels) music scholars to "not pre-restrict our investigations to the musical domain."⁴

Locating myself

The first agent I need to define in this dissertation is myself. In so doing, I am immediately confronted with the complexity of my task—Perich is my research topic, but is also my friend and colleague. He is someone whose work I have performed and commissioned, someone with whom I share strong connections to many of the same institutions and individuals, someone who is a resident of the same city and a fellow member of the New Music Community, and someone of similar age and of the same generation. In writing this dissertation, I strive to produce work that will be useful to the broader field of music, but in so doing, I must also recognize that I am operating from a particular position. This position of proximity and shared history front-loads my research with the familiarity of lived experience and personal insight. Insofar as I am not at a total remove from my topic, I endeavor to leverage this "insider" advantage in the service of research that is comprehensive and would otherwise be difficult to execute. At the same time, I understand that my perspective, as a colleague of Perich's and a fellow member

⁴ Benjamin Piekut, "Actor-Networks in Music History: Clarifications and Critiques," *Twentieth-Century Music* (Cambridge: Cambridge University Press, 2014), 213.

of the New Music Community in New York City, is inevitably colored by this proximity. Staking a claim of total impartiality would be absurd; however, this dissertation is intended to be a broadly useful resource, not a coded, insiders-only affair.

In the paragraph above, I list a number of points of relation that I share with Perich. However, there is unavoidably also a broad range of material and cultural factors that play a key role in understanding Perich and his work that are areas in which I have limited first-hand experience. Similarly, while we are of the same generation, residents of the same city, and members of the same New Music Community, our individual relationships to those cultural configurations cannot be conflated into a universal experience. In the ensuing chapters, I see reflections of many aspects of my own life, but, beyond this opening description of my personal relationship to the topic at hand, I will largely remain out of the spotlight, maintaining the focus on Perich and the way that his individual relationships to various actors have impacted his artistic trajectory.

Important Terms

Before embarking on this study, I would like to define a few key terms that will prove important as this investigation unfolds:

The New Music Community

In this dissertation, I argue that the New Music Community is a specific concept that developed in the early years of the twenty-first century in New York City. This

grouping of composers, performers, and organizations is related to specific musical, economic, generational, technological, and social conditions. Developing a fluency with the cultural norms and history of this community plays a critical role in understanding Perich's work and the conditions of its creation, dissemination, and reception. As such, a significant portion of this dissertation will be devoted to charting the formation and continued existence of the New Music Community, especially in New York City.

The existing scholarship on this post-post-Minimalist generation (or post-Totalist generation, to build on Kyle Gann's terminology)⁵ has been limited, and it has generally dealt with narrow specifics (such as Patrick James Smart's dissertation on the programming practices of three contemporary music groups)⁶ or a single ensemble (such as John Pippen's in-depth study of eighth blackbird).⁷ William Robin's dissertation⁸ has a broader scope and is a valuable resource, but his decision to mainly zero in on what he refers to as "indie classical" and to focus mostly on the ensemble yMusic and a tight-knit circle of composers and performers that are affiliated with that group necessarily results in its primarily describing one of the many overlapping narratives that coalesced into the broader New Music Community. The popular press

⁵ Kyle Gann, *Music Downtown: Writings from the Village Voice* (Berkeley: University of California Press, 2006), 13.

⁶ James Patrick Smart, "The Programming Practices of Alarm Will Sound, the International Contemporary Ensemble, and the San Francisco Contemporary Music Players from 2004–2009" (DMA diss., Arizona State University, 2009).

⁷ John Pippen, "Toward a Postmodern Avant-Garde: Labour, Virtuosity, and Aesthetics in an American New Music Ensemble" (PhD diss., University of Western Ontario, 2014).

⁸ William Robin, "A Scene Without a Name: Indie Classical and American New Music in the Twenty-First Century" (PhD diss., University of North Carolina, Chapel Hill, 2016).

has also made sporadic attempts to describe the New Music Community, but these treatments have generally been brief.⁹

Over the course of Chapter 1, I will map out a grouping of composers, musicians, audiences and affiliated institutions that will be referred to as the “New Music Community.” This moniker articulates a variety of related concepts, although it also suffers from the generic nature of the words from which it is constructed. (On its own, the term “new music” is an ongoing source of communicative problems for composers and contemporary music performers as it can be easily misinterpreted by people who are unfamiliar with the field of contemporary music, as well as by algorithms for search engines and social media platforms.)¹⁰ The primary reason I have chosen to use this term is simply because it is the term I hear most commonly used to describe this musical network by the musicians who are associated with it. I capitalize the term for clarity’s sake, and also to indicate that it is a term referring to a discrete entity (in a similar vein as “Minimalist music” or “Totalist composers”) and not being used more generally (such as “contemporary music”).

While the words “new,” “music,” and “community” all have very broad application, the use of “New Music Community” in this dissertation should generally be understood in more narrow terms. Musical movements are often thought of in terms of some combination of chronology, geography, and affiliations with particular institutions. The

⁹ Most notably, Justin Davidson in *New York Magazine*: “The Next Next Wave” and “A New New York School;” Alex Ross in the *New Yorker*: “Listen to This;” Jayson Greene in *Pitchfork*: “Making Overtures: The Emergence of Indie Classical.”

¹⁰ The ubiquitous use of the term “new music” in the field of contemporary music today can be observed via the term’s use by prominent institutions like New Music USA and the New Music Gathering.

New Music Community describes a similarly imbricated set of factors, which are not universally definitional but are useful in understanding its makeup and evolution. Generally speaking, the New Music Community emerged in the early years of the twenty-first century in New York City. The primary actors in this developing community were mostly Millennial or Xennial composers and contemporary music-affiliated performers, many of whom have shared educational histories (both at universities like Yale and summer music programs like the Bang on a Can Summer Music Festival). Additionally, the New Music Community is marked by its interest in community- and institution-building and its avoidance of hard and fast stylistic or disciplinary boundaries.

“New Music Community” should not be understood as a blanket term that refers to any grouping of composers and affiliated performers at any point in history; in this dissertation, terms such as “field of contemporary music” and “contemporary music scene” will be used for these more general circumstances. It should also not necessarily be understood to encompass the entirety of the field of contemporary music today. Defining the membership of any community is always a tricky affair, and the boundaries of a community do not always look the same from the perspective of those within and outside it. However, while the New Music Community emerged under certain conditions, among certain musicians, and at a certain point in time, I will make the argument that the impact of this initial grouping was amplified by a variety of factors that have ultimately led to its leaving a major imprint on the broader field of contemporary music.

The Uptown/Downtown Divide

This is the terminology I use in this work to describe the general sense of acrimony in the latter half of the twentieth century between composers who embraced the post-Schoenbergian language of serialism and were closely associated with the university system in the United States and the rival group of composers who adhered more closely to the American tradition of experimentalism.¹¹ While the terms “uptown” and “downtown” are derived from socio-geographic descriptives of Manhattan, the stylistic divide could never be mapped perfectly across the city—not to mention that the ramifications of this battlefield mentality were felt far beyond the island of Manhattan. While other terms have been used to describe these opposing camps, I will stick to “uptown” and “downtown” consistently in this work, primarily due to the fact that these are the terms most frequently used by composers and contemporary music performers.¹²

¹¹ In this case, I refer to the experimental American lineage that includes iconoclastic composers such as Henry Cowell and Harry Partch.

¹² Gann, *Music Downtown*, 2. Kyle Gann theorizes a third grouping in this constellation: the “Midtown Composers.” He describes these composers as those who “continue to write symphonies and concertos, wear tuxedos and formal attire to concerts, and do their level best to ignore their marginalization in a world in which they are subject to the whims of the star conductors and soloists and made to feel that their music is inferior to even the minor opuses of the dead masters.” Gann asserts that the term “Midtown” is derived from the fact that these composers were especially well-represented at the Midtown Manhattan institutions of Lincoln Center and the Juilliard School. I opt to exclude this third grouping of composers in the taxonomy used in this dissertation both because of the broader use of a binary Uptown/Downtown configuration among composers and musicians and because key figures in the post-Minimalist (or Totalist) movement centered the Uptown/Downtown discourse in their rhetoric.

Minimalist Music

Minimalism is a highly contested term in music. Famously, some of the very composers who are held up as the forefathers of Minimalist music bristle at the label.¹³ Attempts to establish an authoritative definition of the term or history of the music's development have been as numerous as they have been unsuccessful at achieving consensus. Because of the many competing narratives of Minimalist music and because of what Perich views as the centrality of the influence of Minimalist music and art to his own artistic development, in this text I will broadly adhere to Perich's own definition of Minimalism:

For me, minimalism is when the primary musical or artistic materials are simple processes themselves. Minimalism allows these basic processes to shine through as the core content of the piece, and the other material is crafted to complement these ideas. I think it is simultaneously aesthetic, style, technique, because at a basic level, subjectivity and objectivity become the same thing. It is the writing of the ruleset that is itself a creative process, and the ruleset creates the realm of possibilities. But I think good minimalism keeps this intuitive, so the rules live within an artistic sensibility.¹⁴

While embracing Perich's take on Minimalism is the most functional way to handle the topic in the context of this dissertation, it should also be noted that Perich's own conception of Minimalist art and music has surely been informed by the discourse of artists, critics, and scholars who have been pushing and pulling at the edges of the term for decades. In my research for this dissertation, I have found a number of texts on

¹³ Richard Kostelantetz (ed.), *Writings on Glass* (Berkeley: University of California Press, 1999), 46. For instance, Philip Glass: "I think the word ['minimal'] should be stamped out!"

¹⁴ From email exchange between the author and Tristan Perich: March 17, 2019.

the subject of Minimalist music to be extremely useful, including classics such as Wim Mertens's early (and rather negative) study,¹⁵ Michael Nyman's theorizing about the connections between Minimalist music and serialism,¹⁶ and Keith Potter's exhaustive research on La Monte Young, Terry Riley, Steve Reich, and Philip Glass.¹⁷ Robert Fink's bold approach linking repetition in Minimalist music to "postindustrial, mass-mediated consumer society" and, especially, his treatment of vernacular styles like disco as parallel developments to the more familiarly labeled Minimalist music of the Downtown avant-garde is especially relevant in the context of this dissertation, as is Susan McClary's cross-genre examination of music based on "cyclic repetition."¹⁸ More recent scholarship, like David Chapman's dissertation on the Philip Glass Ensemble¹⁹ and Patrick Nickleson's dissertation focusing on authorial disputes in Minimalist music ensembles²⁰ have provided important information regarding the interpersonal workings of foundational Minimalist ensembles in the Downtown loft period of the 1970s—an important structural precedent to the ensemble- and organization-building that served a central role in the development of the New Music Community.

¹⁵ Wim Mertens, *American Minimal Music: La Monte Young, Terry Riley, Steve Reich, Philip Glass*, trans. J. Hautekiet (London: Hahn and Averill, 1983).

¹⁶ Michael Nyman, *Experimental Music: Cage and Beyond* (Cambridge and New York: Cambridge University Press [1974] 1999), 139-171.

¹⁷ Keith Potter, *Four Musical Minimalists: La Monte Young, Terry Riley, Steve Reich, Philip Glass* (Cambridge and New York: Cambridge University Press, 2000).

¹⁸ McClary, Susan, "Rap, Minimalism, and Structures of Time in Late Twentieth-Century Culture." [Lincoln]: College of Fine and Performing Arts, University of Nebraska—Lincoln, 1998.

¹⁹ David Chapman, "Collaboration, Presence, and Community: The Philip Glass Ensemble in Downtown New York, 1966–1976." (PhD diss., Washington University of St. Louis, 2013).

²⁰ Patrick Nickleson, "Names of Minimalism: Authorship and the Historiography of Dispute in New York Minimalism, 1960-1982," (PhD diss., University of Toronto, 2017).

DIY

DIY (Do It Yourself) can be thought of in a variety of ways, and understanding different modalities of this concept is important for the purposes of this study. Narrowly speaking, DIY can refer to a community centered around anti-consumerist, generally illegal or semi-legal communal spaces and venues that serve as multipurpose sites for performances, parties, creative and technological production, and often also function as communal housing. Fundamentally, DIY spaces are generally occupying formerly industrial spaces in a post-industrial economy to provide alternatives to conventional housing markets, consumer practices, and cultural institutions. This movement has obvious precedents in the loft scene in downtown New York in the 1960s and 1970s, as well as the punk movement.²¹ DIY can also have a more specific, technology-focused connotation, which is also relevant to this study. Creative repurposing of electronics have spawned music and art scenes, like Circuit Bending and Glitch,²² and communities have grown up around organizations like dorkbot,²³ that bring together creative technology enthusiasts in a non-commercial, non-hierarchical social environment. (At a glance, one might identify points of relation between some DIY practices and neoliberalism's rhetorical focus on individual self-determination. In this dissertation, however, most of the DIY movements and communities discussed embrace explicitly anti-capitalist ideologies and/or developed in response to the detritus of consumerism or

²¹ Bernard Gendron, *Between Montmartre and the Mudd Club: Popular Music and the Avant-Garde* (Chicago and London: University of Chicago Press, 2002), 227-246.

²² For more information on Glitch Art, see pages 105-106 of this dissertation.

²³ For further discussion of dorkbot, see pages 80-85 of this dissertation.

as a result of difficult economic times brought about by deindustrialization, deregulation, and social disinvestment.)

Thinking more broadly, the socio-economic fallout from the 2008 financial crisis injected renewed values of self-reliance, handicraft, and thrift into mainstream culture. This turn away from consumerism can also be understood politically, and shifts in political values following the financial crisis can also be thought of in relation to a DIY mentality. This is reflected in the “small-a anarchist”²⁴ organization of protest movements of the time like Occupy Wall Street, the Indignados in Spain, and the Hamechaa Hahevratit “social protests” in Israel.²⁵ It has also manifested in the discrediting or stagnation of centrist, neoliberal-oriented political parties across the Western world (to the benefit of populist parties and politicians on the far left and right) and the renewal of community political organizing, as Guy Standing has theorized.²⁶

As will be explored in this dissertation, the spirit of DIY permeates the values of the New Music Community. This is, in no small part, due to the generational affiliation of key individuals central to the early development of the community, as the generation of young people who were confronted with a collapsing job market, exploding student debt, and disintegrating social protections just as they were beginning their adult lives were some of those most directly impacted by the financial crisis and also most likely to be radicalized by the protest movements and grassroots political organizing that came

²⁴ John Hammond, “The Anarchism of Occupy Wall Street,” *Science & Society* 79, No. 2, (April 2015): 293.

²⁵ Craig Calhoun, “Occupy Wall Street in Perspective,” *British Journal of Sociology* 64, no 1. (March 2013): 27.

²⁶ Guy Standing, *The Precariat: The New Dangerous Class* (London: Bloomsbury Academic, 2011), *Preface*.

in its wake.²⁷ It should be of no surprise that musicians were consistently a prominent component of the Occupy Wall Street presence in New York, or that so many musicians affiliated with the New Music Community signed on to the Occupy Musicians manifesto endorsing the movement.²⁸ Additionally, the history of the Downtown loft scene and the organizational approach of groups like Bang on a Can served as important precursors to the DIY mentality that permeated the early years of the New Music Community in New York.²⁹

Gentrification

The sweeping significance of real estate in New York City can be inferred from the fact that terminology like “uptown” and “downtown” became shorthand to describe competing styles of music. For hundreds of years, decisions about land use on the narrow island of Manhattan (and the four other boroughs that make up New York City) have played out in transformative ways, unleashing economic, cultural, and political impacts while also changing the physical landscape. Ruth Glass coined the term “gentrification” in 1964, describing the “invasion” of urban working class London neighborhoods by the middle classes, ultimately resulting in “all or most of the working

²⁷ Frank Newport, “Democrats More Positive about Socialism than Capitalism,” *Gallup* (August 13, 2018). Polling has indicated a substantial generational component in Americans’ view of capitalism, with younger individuals more likely to prefer socialism over capitalism and older individuals to express the opposite view. Additionally, there has been a steady and precipitous decline in the favorability rating for capitalism unique to the younger generations of Americans in the decade following the financial crisis of 2008.

²⁸ Occupy Musicians, *Occupy Musicians Manifesto* (New York, 2011).

²⁹ For a data-rich study of an array of contemporary DIY groups, see: Stacey Kuznetsov & Eric Paulos, “Rise of the Expert Amateur: DIY Projects, Communities, and Cultures.” *NordiCHI '10 Proceedings of the 6th Nordic Conference on Human-Computer Interaction: Extending Boundaries*, 295-304.

class occupiers [being] displaced and the whole social character of the district [being] changed.”³⁰ In the latter part of the twentieth and twenty-first century, the issue of gentrification and gentrification-related displacement has interacted with developments in the field of music in important ways, especially in New York. Kyle Gann makes explicit the connection between Lower Manhattan and what came to be known as Downtown music: “Downtown music had begun in 1960 when Yoko Ono, a pianist soon associated with the Fluxus movement, opened her loft for a concert series organized by La Monte Young and Richard Maxfield.”³¹ Far from being an exception, the importance of local real estate in the development of the loft-dwelling, Minimalist-oriented scene in the 1960s and 1970s would play out in different, but no less consequential ways for composers and musicians of later generations, including the New Music Community.

While the nature of gentrification has changed somewhat since Ruth Glass first coined the term in the 1960s, it is still a pressing issue in New York City—especially for artists and musicians. In the 1960s and 1970s, as formerly industrial space sat empty all over the city and urban disinvestment led to population loss, artists found an opening to repurpose the derelict districts of Lower Manhattan. This arguably factored into broader emerging trends of gentrification, which (ironically) ultimately ended up displacing many cultural venues from their original locations downtown and has resulted in the more geographically diffuse cultural community and dramatically less affordable city that New York is today.

³⁰ Ruth Glass, *London: Aspects of Change* (London: MacGibbon & Kee, 1964), xvii.

³¹ Gann, *Music Downtown*, xiii.

In tracing the impacts of gentrification on musicians in New York City, foundational texts on the topic provide important insights into the dynamics of urban living around the time that New York's Downtown music scene emerged.³² More recent scholarship illuminates the changing face of gentrification in more recent years, with its trend towards corporatized development interests and weakening of tenant protections,³³ and how gentrification-related displacement has fundamentally transformed New York.³⁴ Lauren Flood's engrossing dissertation provides an extensive accounting of the displacement of Death By Audio, a beloved DIY space in Williamsburg, Brooklyn.³⁵

In New York City, gentrification has traditionally alternately helped and hindered artistic and musical communities and institutions. As Flood has noted: "artist migration generally comes at the heels of the displacement of other racial, ethnic, and socioeconomic demographics; by the time that artists, too, are displaced, the social fabric of a neighborhood often looks radically different than it did a decade prior."³⁶ Charting out the complicated ways in which gentrification has impacted individuals and groups of musicians as well as the venues and institutions around which their

³² Chester Hartman, "The Right to Stay Put," in *Land Reform, American Style* eds. Charles C. Geisler and Frank Popper (Totowa, NJ: Towman and Allanheld, 1984); Glass, *London: Aspects of Change*.

³³ Jason Hackworth, "Postrecession Gentrification in New York City," *Urban Affairs Review* 37, no. 6 (July 2002), 815-843.

³⁴ Kathe Newman and Elvin K. Wyly, "The Right to Stay Put, Revisited: Gentrification and Resistance to Displacement in New York City," *Urban Studies* 43, no. 1 (2006), 23-57.

³⁵ Lauren Flood, "Building and Becoming: DIY Music Technology in New York and Berlin" (PhD diss., Columbia University, 2016).

³⁶ Flood, "Building and Becoming," 198.

communities revolve is an important component of understanding the development of the New Music Community.

The Precariat

The precariat is a term utilized by economist Guy Standing to describe what he argues is a new class formation that has emerged as a result of neoliberalism in much of the West.³⁷ The precariat encompasses the group of workers that lacks labor-related forms of security that were the hallmarks of the protections fought and won for workers through labor organizing during the industrial era. These workers are not defined by a certain level of education or skill set but rather in relation to the lack of stability that results from their working conditions. The precariat is one of seven classes included in the comprehensive attempt to reformat understandings of class groupings in contemporary Great Britain as theorized in *Social Class in the 21st Century*.³⁸

The precariat is a useful concept as it relates to this study because of the traditional labor structure most common in the lives of new music performers and composers. Indeed, the lack of stability or labor protections typical of the freelance musicians who have traditionally been the bedrock of contemporary and experimental music scenes in the United States could almost be viewed as a prototype for the employment conditions in which a growing number of workers across the West find themselves. As these unstable conditions have become more common throughout the

³⁷ Guy Standing, *The Precariat: The New Dangerous Class* (London: Bloomsbury Academic, 2011).

³⁸ Savage, Mike; Cunningham, Niall; Devine, Fiona; Friedman, Sam Emmanuel Taylor; Laurison, Daniel; McKenzie, Lisa; Miles, Andrew; Snee, Helene; Wakeling, Paul, *Social Class in the 21st Century* (London: Pelican Books, 2015).

population, the material and economic concerns of freelance musicians and other types of workers have resulted in a new political alignment. Standing describes the precariat as “the dangerous class” and has located disruptive movements (like Occupy Wall Street) and political realignments (like the rise of Labour Party leader Jeremy Corbyn in the United Kingdom and the election of Donald Trump in the United States) as being outgrowths of the rise of the precariat’s class consciousness and disaffection with the neoliberal status quo.

For the purposes of this dissertation, establishing the interrelations between longstanding labor practices in the freelance music field, generational discontent among Millennial and Millennial-adjacent workers, and increased class consciousness and social rebellion among the precariat class grouping is important to the extent that it undergirds the cultural norms of the New Music Community as it developed. It also explains the ease with which the New Music Community and its members participate in socially-conscious twenty-first century cultural discourse and the tendency of many members of the New Music Community to embrace the radical demands of emergent social justice movements.³⁹

Additionally, it provides an explanation as to why some scholars have been puzzled by the seeming contradiction of New Music Community ensembles espousing leftist rhetoric but not adhering to traditional union labor practices. Scholars like Andrea

³⁹ This applies to broad cultural movements as well as more localized fights for justice. Members of the New Music Community have been central voices in demands to bring racial and gender diversity to programming in classical music, have been outspoken in demanding accountability for sexual harassment and abuse as the #MeToo movement’s impact reached the field of music, and have spearheaded new diversity initiatives to confront historical structural disadvantages of certain groups in classical music (such as Luna Composition Lab, a composition mentorship program for female, non-binary, and gender non-conforming youth).

Moore⁴⁰ and Marianna Ritchey⁴¹ have raised important points with regards to the implications that neoliberalism has had on the field of music and the rhetoric of creative production and consumption. However, in the context of new music, attempts to define “entrepreneurialism” as exclusively an affectation of neoliberalism neglects key aspects of the historical labor structures of contemporary and experimental music scenes as well as the economic reality of freelance musicians’ lives today. For instance, it is easy to criticize Claire Chase⁴² from the left for her use of the term “entrepreneurialism,”⁴³ but it is perhaps more instructive to take an in-depth look at the labor model of the International Contemporary Ensemble, which pays performers on a per-service basis but also provides the option of a stable wage structure for ICE performers who are interested in doing administrative work for the group. Should creative attempts (such as this example) by musician-run ensembles to provide stable incomes to its members in an increasingly unstable field of diminishing union work and tenuous benefits be understood as a willful appropriation of neoliberalism? Guy Standing might argue that individual freelance musicians and cooperatively-organized new music groups are not responsible for the widespread and long-trending decline in union work for musicians or for decisions made at the administrative and donor levels of large music organizations and institutions that champion connections between elitist cultural institutions and

⁴⁰ Andrea Moore, “Neoliberalism and the Musical Entrepreneur,” *Journal of the Society for American Music* 10, no. 1 (2016): 33–53.

⁴¹ Marianna Ritchey, “Amazing Together:’ Mason Bates, Classical Music, and Neoliberal Values,” *Music and Politics* 11, no. 2 (Summer 2017). <http://dx.doi.org/10.3998/mp.9460447.0011.202> .

⁴² Claire Chase is the founder of the International Contemporary Ensemble.

⁴³ Moore, “Neoliberalism and the Musical Entrepreneur,” 46.

corporate power. Rather, leftist members of the precariat (musicians or otherwise) realize that labor protections crafted during a different era are inadequate for workers in the contemporary economy given the post-Fordist reality of sky-rocketing inequality and disintegrating social protections with which they are faced. Viewed from this angle, appeals for adherence to twentieth-century models of labor organizing can seem shortsighted for precariat-minded freelance musicians whose solidarity is often more focused on the need to build a new “progressive consensus” to bring about a “politics of paradise”⁴⁴ that ensures stable livelihoods and dignified living and working conditions for everyone.⁴⁵

The Task At Hand

This dissertation began with a personal recollection of the individual at the center of this dissertation and his music. Over the course of this introduction, we have moved away from the personal to dance across an intricate array of intersecting networks of historical, cultural, economic, technological, and political interest that serve as important actors in the ultimately musical pursuits that lie at the heart of this study. None of these networks or the actors that populate them should be construed as having a uniquely

⁴⁴ Standing, *The Precariat: The New Dangerous Class*.

⁴⁵ However, none of this should be construed as an argument that the impacts of neoliberalism on the field of music are inconsequential. As regards the educational sector specifically, the rhetoric of “entrepreneurialism” often clearly embraces an uncritical neoliberal conception of the term, whether through individual course offerings such as Yale’s “Careers in Music: Creating Value through Innovative Artistic Projects” or new departmental configurations like the Manhattan School of Music’s “Center for Music Entrepreneurship.”

definitive impact on Perich's work; by contrast, none of them should be dismissed, as Perich and his body of work developed and exist amidst this broader configuration.

Moving forward, this study will delve deeper into the relevant topics laid out in this introduction and will identify and traverse a network that helps us understand Perich and his work. In so doing, I will also establish a few key arguments that are relevant to the field of music:

In Chapter 1, I will chronicle the development of the New Music Community. I argue that this network of musicians, organizations, institutions, venues, and audiences is a discrete grouping that emerged in the first years of the twenty-first century beginning in New York City. To establish this argument, I will describe the relevant material, generational, economic, political, musical, and social factors that helped the New Music Community come into being.

In Chapter 2, I investigate Perich's personal narrative more closely. In doing so, I will develop the argument that Perich's creative trajectory was framed by the emergence of strong communities in new music and creative technology, and that these formations—as well as important relationships with individuals, institutions, and technologies related to them—had a meaningful impact on the development of his unique creative practice.

In Chapter 3, I take a step away from narrative to examine Perich's work from an aesthetic perspective. In doing so, I will make the argument that his work cannot

only be understood through the lens of the New Music Community, but also has important points of resonance with non-classical musical communities and genres as well as non-musical developments in the arts.

In Chapter 4, the focus turns specifically to Perich's works for keyboard instruments. Through this shift, I will make the argument that the piano has a foundational position in Perich's aesthetic cosmology and serves as a linchpin between his musical and technological practices, and that his keyboard works establish a new type of electroacoustic-informed, Minimalist-oriented mode of virtuosity.

Before transitioning into the main body of this study, I offer one more personal story reflective of the intersecting musical, social, and technological lines of inquiry that will be pursued over the coming pages:

While the "Music for Toys" concert recounted at the opening of this dissertation was the first time I heard Tristan's music, it was not the first time I crossed paths with him. Sometime prior to that event, at some other no-frills concrete box of a venue, I found myself having trouble concentrating on the music on offer as I kept being distracted by a guy in the audience with a 1970s-model push-button phone in his lap. I thought perhaps he was a performer and the phone would be used in a later piece somehow, but that did not transpire. Sometime later that night, the mystery was solved. With a little help from the social lubricant of shared musical interests, a small group of friends and new acquaintances—including Tristan and I—were hanging out around a

beat-up table and scattered chairs. We were outside, nowhere near a phone jack or an electrical outlet, but out of nowhere the push-button phone started to ring. As I was trying to figure out what exactly was happening—or if perhaps I was hallucinating—Tristan calmly picked up the phone and answered it...

CHAPTER 1: A New Musical Community

This chapter will chart the development of a distinct entity called the New Music Community. In establishing a meaningful understanding of this terminology, various topics will be pursued that are relevant to its development across numerous fields. At the same time, it is important not to lose sight of the fact that this community evolved and was brought into being by individuals. Each of those individuals has their own narrative, and the interweaving of those many narratives and the points of resonance between them is, in part, what created the conditions for a meaningful shift in the structure of the new music scene in the first place. Perich's narrative is one of the threads in this story, and we can learn as much about the New Music Community by investigating Perich as we can learn about Perich by studying the New Music Community's emergence.⁴⁶

Tristan Perich is one of the most creative voices of his generation. As a composer and an artist working across various media, he has etched a compelling and integrated vision of a Minimalist-oriented, process-centric aesthetic that is focused on simple electronic systems employed in transparent ways to sublime effect. The incorporation of simple electronic systems in his work resonates deeply in a contemporary society in which people are surrounded by digital technology, but rarely understand or engage directly with its inner workings. His work melds a consciously simple use of electronic systems with formal structures whose transparency makes

⁴⁶ Following this line of thinking, this chapter will begin with a condensed snapshot of Perich's life and work. A much more detailed survey of this material can be found in Chapter 2.

electronic components seem more tangible and immediate. Whereas the average person's understanding of the inner workings of any of the electronic instruments used in their daily life is so shallow that they might as well operate "as magic,"⁴⁷ Perich's work empowers the listener (or viewer), bringing them into a closer relationship with electronic systems and using those simple systems to create something sublime.

Perich's creative practice emerged from a constellation of influences related to his childhood experiences, his family, his education, and the conditions in the communities and broader society in which he developed. He was coming into his own in the fraught first years of the twenty-first century at a time of meaningful change for his city, the cultural sector, and society more broadly. Substantial shifts were happening in the field of music as he was entering adulthood; individuals and the broader economy were quickly adapting to the integration of new technologies in every facet of life; and American society, and New York in particular, was struggling to find its footing following the trauma of the September 11th attacks.

Perich's first creative outlet was music, and, growing up in the New York area with artistic parents, he was exposed to a lot of contemporary music from an early age. He had a particular affinity for Minimalist music and art, and the classics of the New York Downtown Minimalist heyday of the 1960s and 1970s were a big part of the soundtrack of his childhood. By the time Perich was beginning to write his own music in the 1990s, post-Minimalist composers (and affiliated organizations and performers) were beginning to take the helm at the forefront of the new music scene in New York. Profound changes were happening in the culture and institutional structure of the field of

⁴⁷ Patrick Strange, "1-Bit Symphony: An Interview with Tristan Perich," *Filter*, July 25, 2010.

contemporary music in tandem with the rise of organizations like Bang on a Can. These changes accelerated as Perich entered college, and by the time he was beginning his own career, the conditions for the creation and dissemination of contemporary music, especially in New York, were fundamentally transformed.

A New New Music

The description of the early years of the twenty-first century in Perich's personal narrative also apply more broadly. In these unsettled times, a new generation of new music-affiliated musicians in the city were facing a profoundly different terrain than that that their immediate forebears had known. These changes contextualize the trajectory of both Perich's early career as well as the careers of other composers and performers of his generation in New York City. They are an important factor in fully understanding the creative and social environment in which new music in this period developed, was performed, and received. These unsettled conditions also had an impact on the way that they viewed each other's work and the legacy institutions that existed in the field of contemporary music at the time, as well as their concept of community—musical and otherwise.

While the term “new music” was certainly used prior to the early twenty-first century to describe the work of living composers and in relation to the network of performers dedicated to playing their music, the universality of the term and its strong connection to a community network of composers, performers, recording labels, venues, and associated institutions has become more consistent, universal, and

commonly understood since that time. In the preface to *Downtown Music*, Kyle Gann describes the first time he heard the term “new music” — it was in 1979 and in relation to the New Music New York festival. (He later went on to work for the traveling New Music America Festival.) At the time, however, “new music” mostly referred to “Downtown Music.”⁴⁸ Upon the collapse of the Uptown/Downtown divide, “new music” became a term that could be applied more broadly and that was also closely attached to new community institutions developing at this time.⁴⁹ As such, throughout this dissertation, I will refer to the New Music Community as a discrete entity that came into being over the first several years of the twenty-first century, centered in New York City.

In these years, New York experienced a concentrated musical renewal among musicians who were creating and performing contemporary music. This renaissance catalyzed an explosion of new ensembles, collectives, performance venues, and affiliated organizations, while also transforming the social and hierarchical structures of the contemporary music world. All of this was happening in a gentrifying city that was itself experiencing fundamental shifts in social and economic structures. The particular combination of factors that coalesced in early-twenty-first century New York that facilitated the development of this new New Music Community provides a key backdrop to understanding the network of actors that were in play as Perich’s career emerged.

⁴⁸ Gann, *Downtown Music*, 12. Although, as with all labels, usage is never completely tidy. Writing in 2006, Gann has said that “to this day, many of us continue to use *new music* as more or less synonymous with *downtown music*, if a little less restrictive and New York-based,” whereas the eventual programming of the New Music America Festival became broad enough to include the Butthole Surfers by 1989.

⁴⁹ Gann, *Music Downtown*, xiii.

New York has played host to various waves of revolutionary musical thinking over numerous generations, all of which have had their own cultural norms, urban formations, and institutional relationships. By the end of the twentieth century, however, many young composers were frustrated with a sense of stagnation and the dysfunctional tribalism that was a byproduct of the Uptown/Downtown divide. This division between the more experimental and less institutionally-supported Downtown circle and the more Serialist-oriented Uptown mode of thinking largely persisted through the 1990s. While a group like Bang on a Can,⁵⁰ for instance, could legitimately claim to have had a substantial impact on musical culture in the 1990s, that impact could still largely be described as having an effect on the Downtown scene.⁵¹ The segregated Uptown/Downtown system reigned, sorting new developments in contemporary music accordingly and having a powerful impact on the career trajectories of composers and performers of contemporary music.⁵² Change really started happening in the early years of the twenty-first century, as the divisions between Uptown and Downtown contemporary music cultures disintegrated, and a new generation of musicians started

⁵⁰ Bang on a Can is a new music organization based in New York City, founded in 1987 by composers Michael Gordon, David Lang, and Julia Wolfe.

⁵¹ Julia Wolfe, “Embracing the Clash.” (PhD diss., Princeton University, 2012), 51-52. It must be noted, however, that this is largely a result of the older pre-Bang on a Can generations refusing to get along and not primarily due to animosity among younger composers at the time. Both Steve Reich and Milton Babbitt had pieces performed at the first Bang on a Can Marathon. Julia Wolfe’s anecdote regarding the composers’ personal response to this ecumenical approach to programming is telling: “*Four Organs* was programmed back to back with Milton Babbitt’s *Vision and Prayer*. Babbitt was in attendance as well, but the two never met. Reich entered as Babbitt left, or possibly Babbitt left as Reich entered. There was clearly no interest in meeting on either side...When Babbitt introduced his piece he joked ‘Sorry I got here late, but I got lost—I’ve never been this far downtown before.’”

⁵² For a righteous rant from the Downtown perspective about Uptown control of the Pulitzer Prize, see Gann’s scathing “Composer’s Clearinghouse: The Pulitzer Prize.” Gann, *Music Downtown*, 123-125.

their careers without pledging allegiance to either side. Perich is a member of this generation.

New York City became a focal point for this shift in musical culture for a variety of reasons. Foremost among them is the existence of the same conditions that led to the concept and nomenclature of the Uptown/Downtown framework in the first place: the large concentration of prominent musical institutions and highly-trained musicians that exist in the city. If we think of the Downtown scene as an off-shoot from a more institutional musical establishment⁵³ and consider why such a development took hold so prominently in New York, as opposed to another American city, surely a primary reason would be that there were enough active participants in the Downtown scene in New York to keep it going. By the same token, the concentration of top-flight music schools and important musical institutions in the New York area allowed the Uptown composers to maintain a foothold in the city regardless of any growth in the Downtown scene.

The Uptown/Downtown framework also bears traces of the city's impact on the musical culture of the time. The Downtown music scene developed in Lower Manhattan,⁵⁴ in part, because of the availability of inexpensive industrial space in neighborhoods like SoHo and what is now known as TriBeCa, while the Uptown circle held the allegiance of major performance venues and college campuses, mostly further north in Manhattan.⁵⁵ It also reflects common twentieth-century New York stereotypes,

⁵³ Certainly, important historical events that are thought of as helping generate the Downtown music scene happened in New York and were sometimes affiliated with existing institutions, including John Cage's experimental composition classes at the New School in the 1950s and the support of visual artists and visual arts institutions for Minimalist music in the 1960s.

⁵⁴ "Lower Manhattan" and "Downtown" will be used interchangeably in this dissertation to refer to the neighborhoods in the southern portion of the borough of Manhattan in New York City.

⁵⁵ And also at universities across the country, it should be noted.

in which “Uptown” was understood to mean more professional and wealthy and “Downtown” to be more bohemian and down at the heels.⁵⁶ The continuation of both Downtown and Uptown musical cultures was facilitated by structural elements characteristic of the city at that time; it seems unlikely that the presence of the Downtown scene would have flourished to the extent that it did were there not ample and affordable living and working space for experimental musicians in Lower Manhattan neighborhoods, nor would Uptown music have been as likely to have maintained such a presence were it not for the support of venues and institutions centered further uptown.

A New New York

The disintegration of the Uptown/Downtown framework, and especially its geographic mapping onto the city, can be viewed both as a result of changes directly related to music as well as a result of specific characteristics of the city in the early twenty-first century and the impact those characteristics had on musicians living and working in New York at the time. These characteristics include heightened gentrification across a broader range of the city, greater public safety leading to a more geographically diffuse musical infrastructure, and cultural funding decisions by city government and real estate interests.

⁵⁶ An important socio-geographic note is that this terminology only applies to the portion of Manhattan south of Harlem. While neighborhoods like Harlem, El Barrio, Washington Heights, and Inwood are actually geographically further “uptown” in Manhattan than neighborhoods like the Upper East Side and Upper West Side, when the term “Uptown” is used to indicate elite status or wealth, these working-class, predominantly “ethnic” neighborhoods would not be included.

While many of the trends that led to a transformation of New York City in the twenty-first century got their start prior to the election of Michael Bloomberg as mayor in 2001, the lived reality of a safer,⁵⁷ more gentrified New York City can be understood as really coming to fruition during the Bloomberg era. Michael Bloomberg became mayor of New York City in 2002, shortly after the September 11th terrorist attacks. He served three consecutive terms as mayor, leaving office in 2013. He famously described his vision of New York City as a “luxury product” in a speech to business executives in 2003.⁵⁸ While this luxurious vision of the city certainly included a prominent role for culture, that did not necessarily extend to considering the impacts of heightened gentrification on the day-to-day lives of artists and musicians. By encouraging gentrification of centrally-located working class neighborhoods and applying changes to land-use policy to create new opportunities for luxury housing development in previously industrial areas, Bloomberg’s administration diminished some of the key aspects of the city that had made it such a conducive host to artists throughout much of the twentieth century: the availability of affordable housing in distressed, but centrally-located neighborhoods (often with rent protections) and a large amount of disused industrial space that could be repurposed for live/work space for artists or low-cost cultural venues.

⁵⁷ New York City Police Department (website), “Historical New York City Crime Data,” accessed April 5, 2019, <https://www1.nyc.gov/site/nypd/stats/crime-statistics/historical.page> . Comprehensive New York City crime statistics from 2000-2018 are viewable at this link maintained by the New York Police Department. It should be noted that while the crime rate declined throughout Bloomberg’s three terms, he received substantial criticism for allowing policing tactics that were perceived as racially profiling people of color, most notably “stop and frisk,” and for other racial disparities permeating the city’s law enforcement and criminal justice systems.

⁵⁸ Diane Cardwell, “Mayor Says New York Is Worth the Cost,” *New York Times*, January 8, 2003.

Urban Studies theorist Richard Florida is often credited with popularizing urban regeneration approaches centered around schemes to attract members of the “creative class” to urban neighborhoods near city centers. The “creative class” is a term he developed in the first decade of the twenty-first century to describe the grouping of educated, creative, and urbane residents that his data indicated were associated with urban areas with elevated rates of economic development.⁵⁹ The Bloomberg administration’s policies can be thought of as fitting into a broadly Floridian approach to urban planning that was in vogue in many major American cities at the time. It is telling that Florida’s most recent work, *The New Urban Crisis*,⁶⁰ deals with the impacts of gentrification and displacement in major cities. In many respects, Florida now recognizes that his original creative class-oriented theories for urban regeneration have come with side effects of gentrification and displacement, and that, in the macro- sense, they have become engines for inequality and the disintegration of the middle class. The current revival of grassroots anti-gentrification political organizing in cities like New York, San Francisco, Chicago, Portland, and Los Angeles, and new legislative pushes to put the brakes on gentrification and protect existing residents from displacement are all reflective of how profoundly the terrain has shifted in major American cities in a relatively short period of time.

The shifting nature of the city had an impact on musicians in New York in a variety of ways. While rising living costs generally made remaining in the increasingly

⁵⁹ Richard Florida, *The Rise of the Creative Class, and How It’s Transforming Work, Leisure, Community and Everyday Life* (New York: Basic Books, 2002).

⁶⁰ Richard Florida, *The New Urban Crisis: How Our Cities are Increasing Inequality, Deepening Segregation, and Failing the Middle Class—and What We Can Do About It* (New York: Basic Books. 2017).

gentrified city a more difficult prospect for many working musicians, dramatic reductions in crime meant that people felt more comfortable moving into neighborhoods that had previously been avoided. This effectively expanded the geographic footprint of the new music scene from Manhattan south of Harlem (with a concentration in Lower Manhattan) to a much more diffuse and far-flung network spread throughout the city's five boroughs. As the New Music Community expanded geographically, it became more feasible to develop new performance and project spaces, especially in the less-dense, less-expensive areas outside of Manhattan.⁶¹

In a 2008 article,⁶² *New York* magazine music critic Justin Davidson describes his experience going to the Brooklyn Lyceum venue for the first time:

On my first visit to the Brooklyn Lyceum in Park Slope, Fourth Avenue had reached that unique pitch of joylessness characteristic of a dismal urban artery on a rainy winter night. A sign in front of a closed auto-parts store flickered in the downpour, and passing cars slung their wakes against the occasional pedestrian. The Lyceum showed every one of its hundred years, but it was full of people happy to be hearing music they didn't already know.

Davidson goes on to explicitly tie the proliferation of these new “scruffy” “non-concert halls” to the vitality of the new music scene, which he describes as “the next next

⁶¹ Newman and Wyly, “The Right to Stay Put Revisited,” The Furman Center for Real Estate and Urban Policy, “State of New York City’s Housing & Neighborhoods.” <http://furmancenter.org/research/sonychan> . Newman and Wyly’s study of gentrification and resultant displacement in New York is an invaluable resource to understand how gentrification has shaped contemporary New York City. The Furman Center’s annual “State of New York City’s Housing and Neighborhoods” reports also provide a tremendous amount of data at the neighborhood level, which can be compared from year to year to track shifts in populations and changing demographics, often related to gentrification and displacement.

⁶² Davidson, “The Next Next Wave,” *New York Magazine*.

wave.”⁶³ These new venues shared some things in common, aside from their general location outside of SoHo: they tended to not be focused exclusively on Western art music, they frequently made use of amplification to counter often-imperfect acoustic environments, their ticket prices tended to be affordable, and they often served drinks and/or food and had a casual vibe. By scrambling the conventions of the typical performance environment for classical and contemporary music events, venues like (le) Poisson Rouge, Littlefield, and Galapagos Art Space (intentionally or otherwise) extended a welcoming hand to attract the younger audiences that many orchestras and classical music institutions had been chasing after for years. Composers were now not only premiering new work in austere loft spaces or traditional concert halls, but in live music venues whose characteristics were more familiar to listeners accustomed to the conventions of non-classical music genres.

In describing this new type of venue, it is difficult not to imagine Adorno rolling over in his grave. His attack on Hindemith for “conform[ing] with calculated idiocy to mass culture”⁶⁴ smacks of overstatement, but, in structural terms at least, the New Music Community’s willful embrace of venues presenting a wide array of music on equal terms seems awfully close to a complete hyper-realization of Adorno’s nightmare of an “eclecticism of the shattered.”⁶⁵ By contrast, it seems a confirmation of Susan McClary’s description of the way that the music world seemed to be headed in 1992, when she noted that: “The traditional taxonomic distinction between high and popular culture

⁶³ Davidson, “The Next Next Wave,” *New York Magazine*.

⁶⁴ Theodor Adorno, *Philosophy of New Music*, trans. Robert Hullot-Kentnor (Minneapolis: University of Minnesota Press, 2006), 9.

⁶⁵Theodor Adorno, *Philosophy of New Music*, trans. Robert Hullot-Kentnor (Minneapolis: University of Minnesota Press, 2006), 10.

becomes irrelevant in the eclectic blends characteristic of this new music, and indeed many of these new composers are as often as not classified as New Wave and perform in dance clubs.”⁶⁶ While the willfully ecumenical programming practices of the Bang on a Can Marathon can legitimately be thought of as an important precursor to these venues’ approach, Bang on a Can was primarily bridging the gap between warring factions within the field of contemporary music, not between the “high culture” realm of contemporary music and other “vernacular” or “popular” genres.⁶⁷

The emergence of these new venues also meant the emergence of a new class of “gatekeepers” who were involved in curating and producing performances. Whereas many well-established venues had allegiances to the Uptown or Downtown scenes, these new curators were generally not invested in maintaining that dichotomy. In most cases, their programming extended beyond classical genres. One of the most prominent examples of this new breed of gatekeeper is Ronen Givony, who founded the Wordless Music Series in 2006 (and, later, the Wordless Music Orchestra). Wordless Music was formed based on “the idea that the sound worlds of classical and contemporary instrumental music – in genres such as indie rock and electronic music – share more in common than conventional thinking might suggest,” and programs concerts that feature musicians from various genres with the goal of “demonstrating that the various boundaries and genre distinctions separating music today – popular and classical; uptown and downtown; high art and low – are artificial constructions in need of

⁶⁶ From her afterword to Jacques Attali’s *Noise: The Political Economy of Music*, 158.

⁶⁷ The Stone, overseen by John Zorn, might also be thought of as a relevant prototype in musical and genre diversity, although its curatorial structure is unpredictable by design.

dismantling.”⁶⁸ Not a musician himself, Givony nevertheless emerged as an important force in the New Music Community by virtue of his role as music director at (le) poisson rouge and affiliation with other projects (such as Wordless Music) that were emerging around the same time. He is now the senior curator at National Sawdust (Brooklyn) as well as a curator for the Big Ears Festival (Knoxville, Tennessee), both prominent presenters of new music and experimental music of various genres.

The move away from dogmatic stylistic philosophies that was happening with the disintegration of the Uptown/Downtown divide was mirrored in the attempts by these venues to foster a new audience defined less by genre and more by open-mindedness. Wordless Music’s mission statement (quoted above) is a good example of the strong interest in dismantling rigid barriers between genres that was a common theme in the rhetoric of New Music Community-affiliated institutions at the time. In a 2004 article for the *New Yorker*,⁶⁹ Alex Ross hypothesized that changes in technology had altered listening habits: “It seems to me that a lot of younger listeners think the way the iPod thinks. They are no longer so invested in a single genre, one that promises to mold their being or save the world.”

This iPod generation of listeners was the target audience for many of the new venues, and the reality that presenting a wider array of genres often helped the bottom

⁶⁸ Wordless Music (website), “About,” accessed March 21, 2019, <http://www.wordlessmusic.org/aboutcontact/>.

⁶⁹ Alex Ross, “Listen to This,” *New Yorker*. Ross also articulates these technology-related changes in listening habits with the emergence of “post-classical” music, a term coined by Joseph Horowitz. Interestingly, he directly connects changes in the musical style of young composers of this era with the increasing diversity of music programming: “The London Sinfonietta, for example, will be playing a program next month of Aphex Twin, Jamie Lidell, and other sonic scientists from the Warp Records label, pairing their work with the constructions of Reich and Cage. The borders between ‘popular and ‘classical’ are becoming creatively blurred, and only the Johann Forkels in each camp see a problem.”

line was surely also viewed as a positive. The association of venues with a particular genre of music became viewed as outdated and uneconomical. David Handler, a founder of (le) poisson rouge, a venue that got its start in 2008 and is one of the most successful of the new venues from this period, has described their audience as follows:

We basically are looking for the curious listener who wants to push their palette and who wants to have a good time doing it... A person who is willing to inhabit a different musical space than they are typically used to and if they are going to push their boundary they know that Le Poisson Rouge is a place that they are going to have the highest standard of whatever that is.⁷⁰

The diversity of musical genres being presented at these new venues—and the venues' often overt interest in fostering new audiences who were open to a wide variety of music—lessened the pressure on composers and musicians to fit themselves into any particular mold. The purposefully eclectic approach being employed by these venues also resonates in interesting ways with the research of Roger Kern and Richard Peterson, who tracked the musical preferences of various social classes in the United States in the 1980s and 1990s and found “a qualitative shift in the basis for marking elite status—from snobbish exclusion to omnivorous appropriation.”⁷¹ In a reflection of a diversifying society and changing economic structures, having eclectic musical tastes increasingly has become an indicator of the upper classes. The emergence of venues

⁷⁰ Josh Gordon, “Interview with David Handler,” *Joonbug* (website), accessed March 21, 2019, <https://joonbug.com/newyork/frequency/Joonbug-Interview-David-Handler-Founder-of-Le-Poisson-Rouge/nC7t9xdE94w> .

⁷¹ Roger Kern and Richard Peterson, “Changing Highbrow Taste: From Snob to Omnivore,” *American Sociological Review* 61, no. 5 (October, 1996), 900-907.

embracing this model had a tremendous impact in the way that the emerging New Music Community developed as it moved away from the Uptown/Downtown framework.

New Institutions for a New Community

In addition to new venues, young musicians were establishing other musical institutions and simultaneously engaging in community building that further usurped the old Uptown/Downtown infrastructure and established the groundwork for a new structural concept embodied by the New Music Community. Once again, Bang on a Can must be cited as an important precursor to the DIY spirit of the scrappy musicians who took it upon themselves to organize new institutions that served their artistic community. Composer-run ensembles from the Minimalist period such as the Philip Glass Ensemble and Steve Reich and Musicians are also useful points of reference; however, an important distinction must be made. While those earlier ensembles were self-organized and run with varying levels of a cooperative spirit in mind, the institutions of the New Music Community were often less specifically centered on advocating exclusively for the work of the founders. While there are certainly examples of composer-centered ensembles from the New Music Community generation (Missy Mazzoli's Victoire and David Little's Newspeak are two prominent examples), those ensembles generally functioned more along the lines of a band and less as an ensemble devoted to championing the work of the composer-founder, in contrast to earlier models like Steve Reich and Musicians. Bang on a Can is a somewhat different case from groups like the

Philip Glass Ensemble, or even roughly contemporaneously-founded groups like the Michael Gordon Philharmonic. From the beginning, the annual Bang on a Can Marathon concert featured a large program of works by an assortment of composers. However, as the organization expanded over time to include an ensemble, a publisher, and a recording label, the reality became clear that the promotion of the music of the founding composers—Michael Gordon, David Lang, and Julia Wolfe—was also a priority. While the organization continues to work with a variety of other composers and ensembles through its various initiatives, championing the work of its founders is a consistent element of its activities. In this respect, Bang on a Can represents a middle ground between singularly-focused composer-headed ensembles and organizations and the more broadly community-oriented institutions that are more common in the New Music Community generation.

One of the most celebrated of the new organizations founded as the New Music Community was coming to fruition is New Amsterdam Records. New Amsterdam Records was founded in 2008 by three young composers, Judd Greenstein, Sarah Kirkland Snyder, and William Brittelle. They set up shop in the far-flung Brooklyn neighborhood of Red Hook and set forth on a mission to support musical projects that they describe as “post-genre” and being well-suited to “the diverse musical landscape of our time.”⁷² This rhetoric echoes key ideas that were also important to emerging venues at the time. The unifying idea of being “post-genre” was mutually beneficial to upstart organizations and helped establish the idea of the New Music Community as a cohesive group in the eyes of the press and among musicians themselves. Over time, New

⁷² New Amsterdam Records (website), “About.,” accessed March 21, 2019, <https://www.newamrecords.com/about/> .

Amsterdam has become a respected label with a broad catalogue of recordings and also works with venues across the country to present New Amsterdam-affiliated projects. From the outset, the label received substantial attention in the music press, and that coverage also often echoed the “post-genre” rhetoric that was becoming a foundational tenet of the emerging New Music Community, as can be seen in a National Public Radio piece on New Amsterdam from 2008 that described the label as part of “the new classical tradition” consisting of classically trained musicians who “want to bring all the music that's part of their lives into their compositions.”⁷³ After its founding, New Amsterdam Records quickly became an important part of the emerging New Music Community infrastructure and added to the sense that the center of the new music movement was in Bloomberg’s new New York City— most specifically, in Brooklyn.⁷⁴

The displacement of artists and cultural institutions from Manhattan can largely be understood in the context of gentrification and gentrification-related displacement. Much of this displacement resulted in a flood of artists and institutions moving into Brooklyn. At the same time that artists were viewing Brooklyn as a refuge of sorts from the increasingly untenable real estate environment in Manhattan, developers and city officials were capitalizing on these displaced artists to encourage secondary waves of gentrification in Brooklyn itself. The “rebranding” of Brooklyn—which eventually attained such success that the name of the borough is now sometimes used as an adjective (or punchline?) for “edgy and cool”—was the result of a combination of a genuine new

⁷³ Tom Vitale, “A New Label For Music’s New Blood,” National Public Radio (website), May 29, 2008, <https://www.npr.org/2008/05/29/90951497/a-new-label-for-musics-new-blood> .

⁷⁴ The association between this fresh new music scene and the borough of Brooklyn has become so common that the Los Angeles Philharmonic actually presented a “Brooklyn Festival” focused on new music in 2013.

wave of creative activity in the borough and the cynical exploitation of displaced artists and arts institutions by city agencies and real estate developers to increase land values.⁷⁵

The mayor prior to Bloomberg, Rudolph Giuliani, had a famously contentious relationship with the cultural sector, going so far as to threaten to terminate the Brooklyn Museum of Art's lease unless it canceled an exhibition that included a painting that he disapproved of.⁷⁶ While Bloomberg also ran for mayor on the Republican line, like Giuliani, his relationship with the cultural sector could not have been more different.⁷⁷ Bloomberg's administration was notable for its commitment to arts funding, which was often accompanied by substantial private contributions from the billionaire mayor's own donations. Specifically, over the course of Bloomberg's three terms, the city spent \$2.8 billion on capital budgets for arts groups, including renovation and new construction.⁷⁸ This dedication to cultural funding under Bloomberg occurred both during the formative years of the emerging New Music Community and as its geographic footprint expanded.

⁷⁵ For an overview of the city's efforts to "rebrand" Brooklyn with a focus on arts and culture, see Brenda Parkerson, "From Schlock to Hot: Shifting Perceptions of Brooklyn," *Place Branding and Public Diplomacy* 3, no. 4 (2007), 263-267. doi:<http://dx.doi.org.proxy.library.cornell.edu/10.1057/palgrave.pb.6000078>.

⁷⁶ "Sensation: Young British Artists from the Saatchi Collection" originated at the Royal Academy of Art in 1997 and was programmed for the 1999 season at the Brooklyn Museum of Art. It included *The Holy Virgin Mary*, a painting by Chris Ofili that included elephant dung and collaged pornographic images.

⁷⁷ Bloomberg's choice to run for mayor as a Republican was largely viewed as an opportunistic decision by a man who had previously been a life-long Democrat but was viewed as unlikely to win a Democratic mayoral primary as an outsider to local politics who had not worked his way up through the ranks of the local party structure. Notably, Bloomberg rescinded his affiliation with the Republican party in 2007, becoming an independent, and eventually rejoined the Democratic party in 2018.

⁷⁸ Pogrebin, Robin and Michael M. Grynbaum, "Art Groups Fear Losing a Mayor, and His Money," *New York Times*, July 1, 2013.

Many businesses and developers during this era also saw the benefits of fostering the establishment of cultural venues in previously undesirable locations to increase the desirability (and eventual profitability) of a neighborhood.⁷⁹ For instance, in 2007, Galapagos Art Space was lured away from its original location in Williamsburg, Brooklyn to occupy a new space in DUMBO, Brooklyn with an offer of a historic building of twice the size at half of the rent by Two Trees Management, the landowner of a large portion of real estate in the neighborhood. At the time, Williamsburg was gentrifying very quickly while DUMBO was much more of an “emerging” neighborhood. Jed Walentas, a partner in Two Trees Management described the deal as follows: “Adding a cultural aspect to the neighborhood is a really important thing. Because we own such a big piece of the neighborhood, we can afford to take a long-term, big-picture view.” The city also supported the regeneration of DUMBO by investing heavily in a redesigned waterfront and other aesthetic improvements. DUMBO is now broadly recognized as a luxury neighborhood. After twenty years of programming in Brooklyn, Galapagos Art Space left its DUMBO space in 2014 and moved to Detroit.⁸⁰ In an explanation of the move posted to the Galapagos website, Executive Director Robert Elmes blamed New York’s “white-hot real estate market” and proclaimed that “young artists around the country are giving up on New York City.”⁸¹

⁷⁹ Robertson, Campbell. “Arts Space in Brooklyn to Get New Digs.” *New York Times*. May 30, 2007.

⁸⁰ Moynihan, Colin. “Born in Brooklyn, Now Making a Motown Move.” *New York Times*. December 7, 2014.

⁸¹ Galapagos Art Space (website), “Why Detroit?,” accessed March 21, 2019, <https://www.galapagosdetroit.com/whydetroit/> .

As is made clear by the example of Galapagos Art Space, many of these preferential arrangements did not turn out to be long-lasting. Ultimately, many cultural venues found themselves subjected to higher rents or eviction as secondary waves of gentrification spread throughout the outer boroughs of the city. Other cultural venues and live/work spaces in formerly industrial buildings were pushed out as a result of changes in land use policy by the city to facilitate luxury residential development.⁸² However, there was a golden period in the early years of the twenty-first century in which affordable cultural space in safe neighborhoods helped the institutions of the burgeoning New Music Community get off the ground in New York City.

To reflect and connect the many participants in this emerging community, new modalities of communication and connection began to emerge. This included blogs such as *Sequenza21*, *The Rest Is Noise*, and *I Care If You Listen*, which provided universally accessible, free platforms for disseminating information about new music events while also connecting various members of the community, from composers and performers to critics and listeners. Various composers and performers also maintained their own personal, new music-oriented blogs,⁸³ and online discourse via platforms like Facebook and Twitter also developed robustly as they emerged. This shift towards making community connections in the digital realm mirrored broader changes in social patterns as social media became central to the culture at large, but it also helped

⁸² Lauren Flood, "Building and Becoming." Lauren Flood provides a thorough analysis of the impact of city zoning changes in Williamsburg, Brooklyn, and on the DIY community there in particular, in her dissertation.

⁸³ These personal blogs were frequently a part of the individual's personal website. Composers Nico Muhly and Judd Greenstein had notably active blogs on their respective websites and composer and performer Matt Marks had an extremely active presence on social media platforms like Facebook and Twitter in this period.

address a particular need resulting from the geographic expansion of the new music landscape in New York: as musicians and venues became more far-flung, it became increasingly difficult to physically make it to performances, album-release parties, and the like. As it became more challenging to physically connect with other members of the community on a consistent basis, digital communication became more useful.

William Robin suggests that the emergence of the “new-music blogosphere” “facilitated the cohort’s transformation from a group of Tanglewood, Bang on a Can, and Yale alumna into a generation as understood by the press and institutional world of classical music.” He makes a strong case that online community formation was both an act of “generationalism” that fed into rhetoric about the New Music Community as a young generation building new structures from the rubble of classical music and also created the conditions for “mediation-by-self,”⁸⁴ in which members of the New Music Community “develop[ed] their ideas, in a dialogue with one another that was also visible to the public.” At a time when social media and online discourse were becoming the norm for both individuals and media outlets, the vibrant online new music community helped solidify bonds among musicians, between musicians and institutional players like music critics, and between performers and composers and a broader audience of curious listeners.⁸⁵

In addition to fostering communal ties online, the New Music Community in New York engaged in deliberate IRL (“in real life”) community building efforts as well. Most prominent among these is the New Music Bake Sale. Held for the first time in 2009, this

⁸⁴ A term he borrows from Judd Greenstein.

⁸⁵ William Robin, “A Scene Without a Name,” 57-72.

event provided an opportunity for all of the organizations, ensembles, and individuals that were working within the flourishing New Music Community to come together in one large-scale, annual event. While the New Music Bake Sale included performances by New York City-based performers and ensembles from the outset, individual organizations also set up tables to get the word out about their projects, to sell merchandise, and to raise money through the classic DIY method of a bake sale. Crucially, the bake sale provided innumerable points of contact for every participant and attendee, and quickly became one of the key social experiences of the year for people in the new music scene. Whereas a concert invariably focuses attention on the performers, the New Music Bake Sale explicitly emphasized the concept of the New Music Community as a varied and functioning network of people and institutions, inclusive of ensembles and composers, but also of record labels, publishers, venues, and funding bodies. The concept of the new music scene as a community, not an industry or academic field, as well as the DIY, artist-controlled nature of the event were central to the New Music Bake Sale and are also hallmarks of the cultural norms that have become characteristic of the New Music Community.⁸⁶

⁸⁶ The New Music Bake Sale can also be thought of as a precursor to the New Music Gathering (founded in 2014). While that event is not New York City-specific and takes on aspects of a traditional academic conference, it still retains the emphasis on community-building that was at the heart of the New Music Bake Sale. It is no coincidence that several of the founders of the New Music Gathering were also heavily involved in the New Music Bake Sale, including Lainie Fefferman and Matt Marks.

Music, Millennials, and the Precariat

In many respects, comparing the experience of various generations of New York musicians reveals many commonalities— the struggle of young musicians to “get their foot in the door,” tensions between older and younger generations as working structures and musical styles shift over time, an incongruous mélange of commercial and noncommercial work, and a sense of economic instability for those without consistent employment in a large institution, like an orchestra. Certain aspects of life as a working musician are related to relatively stable conditions in the field of music, and especially those in the “sub-field of restricted production” (to use Bourdieu’s terminology).⁸⁷ Musicians trying to build a career in these mostly non-commercial sectors of the music industry will always be faced with the peculiarities of getting ahead in a field where Bourdieu’s “loser wins”⁸⁸ rules often apply and where making a living generally requires attaining a degree of cultural power before one gains access to any economic power or stability. Historically, the majority of musicians affiliated with contemporary music in the United States have been some of the most economically marginal in the field. Even in the unusually robust era of government support during the height of WPA funding under the Roosevelt administration, when the federal government was directly employing

⁸⁷ Pierre Bourdieu, *The Field of Cultural Production: Essays on Art and Literature* (New York: Columbia University Press, 1993), 37-43.

⁸⁸ Bourdieu, *The Field of Cultural Production*, 39. Bourdieu describes “the most perfectly autonomous sector of the field of cultural production” as that in which “the only audience aimed at is other producers.” This results in a “systematic inversion of the fundamental principles of all ordinary economies.” Aspects of this theorization certainly apply to the field of contemporary music (and classical music more broadly), in that one’s advancement in the field is related primarily to the esteem in which one is held by one’s peers as opposed to the economic success one achieves from one’s craft.

thousands of musicians through the Federal Music Program, a program to provide compensation for composers was never adopted.⁸⁹ In general, musicians affiliated with the contemporary music scene of their time have worked as freelancers, struggled economically, and often relied on non-musical work to sustain themselves materially.⁹⁰

In Blair Tindall's commercially successful memoir, *Mozart in the Jungle: Sex, Drugs, and Classical Music*, she charts the trajectory of her career as a freelance oboist in New York in the 1980s and 1990s. While media reception revolved mainly around scandalized takes on the book's frank descriptions of drug use (and abuse) and sexual escapades (and abuse) in the classical music world, it is also a detailed account of the economic conditions of freelancing in New York at the time, as well as a first-hand account of the cultural norms and life expectations of musicians working in the freelance scene in that period. Considering the memoir from a generational perspective, the stark conditions that face the Millennial generation of freelancers in New York are cast in a harsh light. A central argument in the book is that classical music institutions in the United States grew and professionalized tremendously beginning in the 1960s due to large-scale investments by corporate, foundation, and government donors,⁹¹ leading to a glut of institutions and highly-trained classical musicians that overwhelmed the

⁸⁹ Melissa Jenny de Graaf, "Documenting Music in the New Deal: The New York Composers' Forum Concerts, 1935–1940," (PhD diss., Brandeis University, 2005), 64.

⁹⁰ Lola Fadulu, "I Expected to Have a Day Job for the Rest of My Life: How Philip Glass Went from Driving Taxis to Becoming One of the Most Celebrated Composers of our Time," *The Atlantic*, April 20, 2018, <https://www.theatlantic.com/business/archive/2018/04/philip-glass-taxi-driver-composer/558278/>. Famously, Philip Glass held down a variety of non-musical jobs until his early forties, including with a moving company and doing plumbing work. In this 2018 interview with the *Atlantic*, he said: "I expected to have a day job for the rest of my life."

⁹¹ A history that is also described in detail, and especially so as relates to experimental music and the field of composition, in: Catherine M. Cameron's *Dialectics in the Arts: The Rise of Experimentalism in American Music*, (Westport: Praeger, 1996).

“market demand” of the public by the 1990s. (She also highlights reduced funding, financial mismanagement of cultural institutions, and changes in technology and labor practices as important aspects of this general decline.)

While Tindall spends much of the book describing what she sees as the collapse of opportunity in the classical music field and worsening quality of life for working musicians, reading the work from a Millennial perspective, the things that jumped out at me from her depiction of her life as a freelancer included the consistent availability of well-paid commercial studio work, the low cost of living in widely available rent-stabilized housing, and upper-middle class incomes for freelancers without non-musical day jobs. Tindall notes that when she left the Broadway show position where she had been working in the late 1990s to pursue a graduate degree, she was “leaving an \$82,000 salary, health insurance, pension contributions, and a flexible schedule for a year of school with little income.”⁹² To be clear, Tindall was unquestionably in the upper tier of freelancers at the time, with regular engagements with high profile ensembles including the New York Philharmonic as well as well-paid commercial and Broadway work. However, the general sense that Tindall and her community of classical freelancers in New York in the 1980s and 1990s generally expected to enjoy relatively comfortable middle-class lives is quite different from the norm today. Freelancers in New York today are faced with fewer and more competitive gigs, lower rates of commercial and/or union work and the unlikelihood of employment benefits, as well as dramatically higher costs of living.

⁹² Blair Tindall, *Mozart in the Jungle: Sex, Drugs, and Classical Music* (New York: Grove Press, 2005), 297.

Tellingly, I realized while reading *Mozart in the Jungle* that I lived for a summer in the early 2000s in the same Upper West Side building in which Tindall resides for most of the book— a building that she devotes many pages of the book to disparaging in lurid detail. When I lived there, I was starstruck at living in a doorman building with pre-war details and a functional elevator in a well-to-do area two blocks from Riverside Park, but I was also certain that, while the majority of tenants in the sizable building were also musicians (almost exclusively of older generations), there was no way that I would ever be able to afford to live there. I was only housesitting for the summer, and the landlords were doing everything they could to remove the building's units from the rent stabilization system so that they could charge luxury market-rate rents.

The fact that the majority of musicians in the New Music Community are freelancers is not a remarkable feature of their generation. What is different, however, is the extent to which being a classically-trained freelancer has become more difficult and how the instability of freelancing has become a more common labor condition in the broader economy. The emerging precariat class, as described by Guy Standing, shares a number of key characteristics with music freelancers in regards to “*relations of production*: so-called ‘flexible’ labor contracts; temporary jobs; labor as casuals, part-timers, or intermittently for labor brokers or employment agencies” as well as “*relations of distribution*... without non-wage benefits, such as pensions, paid holidays, retrenchment benefits and medical coverage.”⁹³ For New York freelancers (musical or otherwise), these general precariat class difficulties are compounded by sky-rocketing costs of living and the oppressive and inescapable student debt burdens that many

⁹³ Guy Standing, “The Precariat,” *Contexts* 13 (Fall 2014), 10, doi:<http://dx.doi.org.proxy.library.cornell.edu/10.1177/1536504214558209> .

college-educated younger people are saddled with. Because the conditions of the emerging precariat class dovetail with many of the struggles of freelance musicians, the resulting cultural backlash against neoliberal political and economic structures⁹⁴ that began to emerge in the first decade of the 2000s resonated strongly among many musicians and in the New Music Community. As DIY practices, grassroots political organizing, and large-scale protest movements developed in response to the economic collapse following the financial crisis of 2008,⁹⁵ the emerging New Music Community was marked by these generationally-inflected, precariat-class-affiliated cultural values. The primarily Millennial and Millennial-adjacent individuals at the center of the emerging New Music Community had strong generational concerns represented in the platforms of movements like Occupy Wall Street, a movement that, from the outset, was supported most actively by the Millennial generation. At the same time, the explosive class rage of the newly politicized precariat class also represented the cohesion of a broader social movement demanding action to address some of the structural and economic struggles that, not coincidentally, have affected generations of freelance musicians — especially those focused on contemporary and experimental music.

While the foundation of the New Music Community was the result of a confluence of new institutions, new modes of musical thinking, and a new way of conceiving of musical community, a characteristic quality that developed from these different aspects

⁹⁴ Most notably, these include the rising cost of living as a result of stagnant wages in an increasingly deregulated, corporate-oriented economy; social disinvestment, including the skyrocketing costs of tertiary education; and mainstream political parties who prioritized deregulation and corporate profits over economic mobility and social solidarity.

⁹⁵ I refer here to the global financial crisis of 2008 that began with the subprime mortgage crisis in the United States and then developed into an international banking crisis, precipitating the Great Recession.

of “newness” was the centrality of a DIY philosophy. Rather than push old institutions to change, members of the New Music Community created new institutions for themselves. Rather than convince established classical music audiences to give their music a chance, they developed ways of reaching new listeners and creating new audiences. Rather than working within the existing power structures of contemporary classical music, they constructed a new template for musical community. This focus on building new structures instead of working within existing ones reflects a broader cultural sensibility of the largely Millennial generation cohort of musicians who were central to the creation of the New Music Community. In so doing, these musicians took a step away from Bourdieu’s “perfectly autonomous sector” in which “producers produce for other producers”⁹⁶ and opened themselves to a broader, and less uniformly “high culture,” demographic. While there are clearly strong historical precursors in experimental music of musicians taking the initiative to start ensembles and organizations to support the work they are creating, this is, again, an area in which the New Music Community’s approaches were also reflected in the broader culture at the time. As more social and economic activity moved to the internet, and as many Americans were confronted with difficult new economic realities in the Great Recession, an explosion of online community formation and entrepreneurialism unfolded. This manifested in innumerable ways — everything from Etsy.com (which allowed individuals to sell handmade crafts online), MeetUp.com (which facilitated IRL gatherings of people based on common interests), to the centrality of social media platforms and live-streaming citizen journalism to grassroots political organizing. In the early 2000s,

⁹⁶ Bourdieu, *The Field of Cultural Production*, 39.

Americans were leveraging new tools online to create new communities and to create new economic platforms for themselves. Stacey Kuznetsov and Eric Paulos's research determined that "thousands of DIY communities exist today" and that "recent breakthroughs in technology" have resulted in "accessibility and decentralization... enabling large communities to form around the transfer of DIY information."⁹⁷ The New Music Community was coming into being at a time when a DIY spirit was coursing through the broader American public, and it took the initiative to build new organizations centered around shared community interests.⁹⁸

The New Music Community developed in a safer city under an administration dedicated to expanded cultural support. At the same time, it was profoundly marked by the financial crisis of 2008 and subsequent Great Recession. These economic crises had a distinct impact on the Millennial generation, many of whom were beginning their careers in the depths of the economic turmoil, including many of the key participants in the founding of the institutions that were incubating the New Music Community. As a result, many of the values that became closely identified with the Millennial generation in general—and especially so during and following the Great Recession—can also be perceived as characteristics of the New Music Community. These include a distrust of

⁹⁷ Kuznetsov and Paulos, "Rise of the Expert Amateur," 296.

⁹⁸ For a thorough case study of one such internet-enabled DIY community (the "Maker movement"), see: Lauren Flood, "Building and Becoming," 44-88.

establishment institutions, an emphasis on civic participation and community engagement, and an openness to diversity and new technology.⁹⁹

In *Translating Anarchy: The Anarchism of Occupy Wall Street*,¹⁰⁰ Mark Bray, one of the central members of Occupy Wall Street's Press Working Group, describes in detail how the Occupy movement should not be understood simply as a direct political response to an unresponsive government, but as "the shift from the relatively hierarchical Marxist politics of the new left to the new horizontal anarchist politics of the 21st century radical left."¹⁰¹ This shift was manifested in many ways in the movement, including its focus on direct democracy and decision-making through consensus, the empowerment of individuals to become directly involved with organizing, and a focus on

⁹⁹ While it is true that many of the prominent musicians involved with the founding of New Music Community institutions operated from a position of having the cultural capital that comes with a top-flight university education, that does not negate the broader cultural norms of their generation, which were greatly impacted by the Great Recession and the protest movements and political realignments that followed. In historical narratives such as this one there is a tendency to spend the most time discussing the most successful individuals. However, the New Music Community, even in its early days, included many many more people than could be included in a single study of this scope and those individuals represent a spectrum of personal experience and privilege. The people least likely to be included here are also probably those most likely to have been directly and severely impacted by the economic conditions that reached true crisis levels for many during the Great Recession. Ironically, critiques of the New Music Community from the left that focus on the personal privilege of some of its leading participants closely echo critiques of Occupy Wall Street in conservative media. See: Katherine Howell, "Study: OWS Was Disproportionately Rich, Overwhelmingly White," *National Review*, January 29, 2013, <https://www.nationalreview.com/corner/study-ows-was-disproportionately-rich-overwhelmingly-white-katherine-connell/> .

¹⁰⁰ Mark Bray, *Translating Anarchy: The Anarchism of Occupy Wall Street* (Alresford, UK: John Hunt Publishing, 2013).

¹⁰¹ Bray, "Translating Anarchy," 16.

collectively building an alternate social structure that reflected the movement's values. This pivot away from top-down political organizing came at a time of profound cultural shifts in which people's faith in large institutions was collapsing¹⁰² and many Americans were engaging with new ways of community-building and commerce via the Internet. John L. Hammond identifies the core values of Occupy Wall Street as: "horizontalism (no formal leadership), prefiguration (attempting to model the desired future society in the movement's own practice), autonomy from the state and other political organizations, mutual aid, and defiance of government authority."¹⁰³ Occupy Wall Street protesters simultaneously critiqued the existing social order while collectively and independently organizing their occupation sites according to the values the movement espoused. These core principles can be thought of as having a strong generational component, and can be observed via the sharp distinctions in cultural values between Millennial and younger generations and those who are older. In a parallel manifestation of these generational principles, the New Music Community rejected the values of the existing musical establishment while creating its own new institutions and an independent community in the image of its own musical and social values.

The points of relation between Occupy Wall Street and the New Music Community being discussed here owe much to Millennial generationalism,¹⁰⁴ and are not necessarily primarily political. The many individuals involved with the early days of

¹⁰² Gallup, "Confidence in Institutions," <https://news.gallup.com/poll/1597/confidence-institutions.aspx> .

¹⁰³ Hammond, "The Anarchism of Occupy Wall Street," 288–313.

¹⁰⁴ Ruth Milkman, "Revolt of the College-Educated Millennials," *Contexts* 11, no. 2 (2012), 13. As Ruth Milkman has indicated: "The Occupy Wall Street Movement is, above all, a generational phenomenon."

the New Music Community surely represent a spectrum of political engagement and activism, but most of those individuals are members of the primary generational grouping for which Occupy Wall Street's message was especially well-honed. The New Music Community is not a political movement, but it should be noted that overt political rhetoric has played an important role in the lives and careers of a number of its most prominent members. An early collaborative effort of the nascent New Music Community was the Free Speech Zone tour in 2005, in which NOW Ensemble and Newspeak toured the East Coast performing politically-charged new music in response to the reelection of George W. Bush.¹⁰⁵ The tour was organized by David T. Little, Judd Greenstein, and Missy Mazzoli—three of the most prominent composers affiliated with the emergence of the New Music Community—and was immortalized in *The End of New Music* (2007), a documentary by Steven S. Taylor, itself an early example of media representation of the New Music Community as a discrete entity. Additionally, a number of prominent New Music Community-affiliated composers saw their first major success in the form of overtly political work—two prominent examples of this include Ted Hearne and his scathing, anti-Bush song cycle *Katrina Ballads* and David T. Little's *Solider Songs*, an anti-war opera (created and premiered during the Iraq War under George W. Bush).

To be clear, protest movements and activist organizing within the cultural field that directly address issues of systemic inequalities and injustice can be thought of as more direct affiliates (or even off-shoots of) Occupy Wall Street. These include Occupy Museums, Diverse Voices in New Music, Decolonize this Place, Musicians Organizing

¹⁰⁵ Robin, "A Scene Without a Name," 41-48.

for Resistance, Working Artists and the Greater Economy (W.A.G.E.), and Gender Relations in New Music (GRiNM). The cultural field has also been marked by active participation of artists in social justice movements and the application of heightened standards of accountability demanded by #MeToo and similar movements that have resulted in the exposure of systemic abusive conditions across a variety of artistic disciplines and the take-down of prominent individuals in positions of power. The New Music Community is not an activist group, and its primary goals have never been in the realm of social justice. However, the cultural norms and values of the New Music Community have been greatly impacted by the Millennial generationalism and socio-economic conditions that impacted movements like Occupy Wall Street, which was developing at the same time and in the same city.

Shoulders to Stand On: Bang on a Can

The development of the New Music Community in the early years of the twenty-first century in New York can legitimately be thought of as an important point of genesis, but it did not emerge from nothing and was not solely a manifestation of opposition to the existing status quo. New York City has a long history of experimental music as well as important examples of musicians taking direct control over the organizations and institutions that helped structure the contemporary music scenes of their time. For much of the twentieth century, most of these activities took place within the construct of the Uptown/Downtown divide, which generally limited their scope and also ensured that certain avenues of support were foreclosed to certain musicians, depending on their

affiliation. From the very start, Bang on a Can tried to out-maneuver this division, and in so doing served as both a precursor to and seed-sower for the New Music Community.

Bang on a Can is a new music organization based in New York City that was founded by composers Michael Gordon, David Lang, and Julia Wolfe in 1987. In many respects, the organization's principles and the way in which it developed served as a template that the New Music Community later applied to the broader world of contemporary music. From the outset, Bang on a Can was disaffected from the Uptown/Downtown framework. Julia Wolfe described the situation as follows:

When David Lang, Michael Gordon, and I found ourselves in New York in 1986, we didn't see an exciting outlet for our music. Things were very polarized—academic music uptown, with audiences filled with new music specialists, a very critical atmosphere, and everyone in tuxes, and downtown, another uniform, black t-shirts and another serious pretension. Neither side was really fun, and there was a whole new generation of composers who didn't fit in anywhere.¹⁰⁶

Bang on a Can was never primarily interested in advocating for a new style of music, but for a new structure for musical community. Starting first with the vehicle of the Bang on a Can Marathon, an annual many-hours-long concert featuring a program of contemporary music with eclectic stylistic affiliations, the organization has expanded over the years to include performing ensembles (the Bang on a Can All-Stars and Asphalt Orchestra marching band), a recording label (Cantaloupe), commissioning initiatives (People's Commissioning Fund), outreach programs (Found Sound Nation), and a summer festival (Bang on a Can Summer Music Festival, also known

¹⁰⁶ William Robin, "Imagining Community at Bang on a Can's First Marathon," *New Music Box* (blog), June 22, 2016, <https://nmbx.newmusicusa.org/imagining-community-at-bang-on-a-cans-first-marathon/#two>. Julia Wolfe is quoted in this article from her contribution to the program brochure for Great Performers at Lincoln Center: Bang on a Can All-Stars, March 15, 1995.

affectionately by its nickname, “Banglewood”).¹⁰⁷ The decision by Bang on a Can to create new institutions as the organization grew, as opposed to integrating into existing establishment institutions, created a roadmap for members of the next generation who were able to fully achieve Bang on a Can’s goal of not just creating an alternative space outside of the Uptown/Downtown framework for new music to exist, but of displacing that framework entirely. While Bang on a Can was clearly viewed as operating outside of the mainstream at the time of its founding, there can be no doubt that it has become central to today’s new music ecosystem as the old establishment has been displaced and the Bang on a Can founding composers have now received traditional plaudits from the musical establishment that would have been unthinkable in the 1990s. (These include David Lang and Julia Wolfe’s Pulitzer prizes, and the faculty positions of David Lang at Yale University and Julia Wolfe and Michael Gordon at New York University.)

Perich was a student fellow at the first Bang on a Can Summer Music Festival in 2002, its inaugural year. This affiliation is shared with a who’s who of composers and performers who had important impacts on the development of emerging New Music Community organizations. (Please refer to a partial list of Banglewood alumni and relevant affiliations below.)¹⁰⁸ The Bang on a Can festival served both as a primer in new music organization construction and as a concentrated networking opportunity for

¹⁰⁷ A tongue-in-cheek reference to the nearby Tanglewood Music Festival.

¹⁰⁸ New Amsterdam Records (Judd Greenstein, 2002), New Music Bake Sale (Eileen Mack, 2002; Lainie Fefferman, 2003; David T. Little, 2011), New Music Gathering (Jascha Narveson, 2003; Lainie Fefferman, 2003), EXAPNO (Lainie Fefferman, 2003; Jascha Narveson, 2003), Found Sound Nation (Elena Moon Park, 2006; Jeremy Thal, 2006/2007), Sleeping Giants (Ted Hearne, 2004; Timo Andres, 2009), Avaloch Farm Music Institute (Michael Compitello, 2007), The Experimental Music Yearbook (Casey Anderson, 2008), Omaha Under the Radar (Amanda DeBoer, 2010), Fast Forward Austin (Robert Honstein, 2010), Kettle Corn New Music (Loren Loiacono, 2012; Alex Weiser, 2014), Wild Shore (Andie Springer, 2007/2008), among others.

young musicians who were interested in new music and Bang on a Can's alternative approach. In contrast to many summer music festivals, student fellows at Banglewood do not simply rehearse and perform music; they also have opportunities to self-produce performances, initiate collaborations, and to attend sessions with Bang on a Can staff on topics such as fundraising and organization-building.¹⁰⁹ Over time, the festival has produced a network of alumni¹¹⁰ who have all received practical instruction in the basic tenets of the Bang on a Can philosophy and who also have connections to a large group of like-minded musicians.¹¹¹

In David Lang's blistering letter¹¹² to the *New York Times* in response to a 1988 article featuring Charles Wuorinen, he decries the "totalitarian world view"¹¹³ of the powers that be:

It is easy to see that if such a school gets in power it might try to remake the musical world in its own image.

¹⁰⁹ A critic of neoliberalism's infiltration of the musical field might characterize this extra-musical instruction as advocacy of post-Fordist "entrepreneurialism." However, as the de facto model for Banglewood-affiliated new music organizations has tended to be non-profit, cooperatively organized and run, and non-hierarchically community-oriented, these practices could probably be more accurately described as DIY rather than entrepreneurial.

¹¹⁰ It should be noted that a large proportion of Bang on a Can Summer Music Festival attendees have been based in the New York City area, particularly in the festival's early years. This facilitated the translation of connections made at Banglewood into the creation of new ensembles and organizations in New York City. This effect was not limited to New York-based fellows, but was strongest among them.

¹¹¹ William Robin, "A Scene Without a Name: Indie Classical and American New Music in the Twenty-First Century" (PhD diss., University of North Carolina, Chapel Hill, 2016), 38-59. William Robin discusses the importance of the Bang on a Can Summer Festival to many of the central individuals in the New Music Community at length in his dissertation.

¹¹² David Lang, "Body Count," Letter to the Editor in *New York Times*, June 26, 1988, <https://www.nytimes.com/1988/06/26/arts/l-body-count-179188.html> .

¹¹³ Lang, "Body Count."

Such is the case with Mr. Wuorinen's school, the composers descended from Schoenberg's experiments writing music with 12 equal tones. No one is quite sure how it happened, but in the 60's this school took control of the musical scene, wielding enormous power on committees, giving commissions, awarding prizes and professorships, force-feeding students, rooting out dissent with the ardor of holy warriors on a serial jihad.

Lang's clear distaste for the enforcement of stylistic rigidity underlies Bang on a Can's mission, even from its earliest days. And, *critically*, it should be noted that Lang's primary complaints with Wuorinen relate not to the composer's music, but to his divisive behavior in the context of the field of contemporary music. Later in the same letter to the editor Lang suggests that: "Only by encouraging diversity can music hope to stay vital."¹¹⁴ This dovetails closely with the perspective of many of the new venues emerging in the early 2000s that were interested in developing an "iPod generation" audience, as well as with the New Music Community's general disinterest in engaging in the Uptown/Downtown war or setting their music apart from other musical genres or traditions. Whereas in the late 1980s, Bang on a Can had to aggressively stake out territory for its vision of a post-Uptown/Downtown new music scene, the New Music Community was able to leverage the territory won in those battles to build a new dominant structure for contemporary music culture — one that was less riven by stylistic divides and that was also more open to the broader field of music.

¹¹⁴ Lang, "Body Count."

CHAPTER 2: Charting Perich's Personal Trajectory

I have thus far made a special effort to paint a thorough picture of the New Music Community due to the current paucity of scholarly writing on the topic, as well as its relevance to the study of the music of any American composer of the Millennial generation. However, as this study shifts now to look more closely at Perich's life and work, I will heed Latour's call to "follow the actor."¹¹⁵ As Piekut has stated, "following the actor" must include "disregarding any artificial and normative separations among fields and actors and embracing the messy assemblages that result."¹¹⁶ While the New Music Community must be considered an important component in any study of Perich's music, this inquiry must also broaden into other areas that have thus far received little attention.

Early Influences

Perich grew up in an artistic family and had access to a solid musical education. While he was born in New York City, he spent most of his childhood in Katonah, in Westchester County, just north of the city. He began private piano lessons at the age of

¹¹⁵ Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford: Oxford University Press, 2005), 12.

¹¹⁶ Piekut, *Experimentalism Otherwise*, 9.

eight, but quickly found that improvisation and creating his own music held more interest for him than learning the standard repertoire. He attended the Rippowam Cisqua School, which had a music program, and he participated in an after-school rock band program whose teacher also helped him learn the basics of recording technology and audio software. From early on, he identified as a “music kid.”¹¹⁷ At the age of thirteen, he enrolled in the Manhattan School of Music Pre-College program, where he studied piano with Peter Vinograd and composition with Christopher Vassiliades. His time at Manhattan School of Music opened his eyes to a broader world of musicians and music students; and he views this period, when he was going into the city every Saturday for a packed day of music at MSM, as the time when he started to get more “serious” about music. In his second year of high school, he left Rippowam Cisqua and the Manhattan School of Music Pre-College program to enroll at the Phillips Academy in Andover, Massachusetts.¹¹⁸ Perich blossomed at Andover, and while the curriculum he followed there was not solely focused on music, the “freedom of boarding school” (as he has described it) and the sense of community that came from “hanging around the music building”¹¹⁹ meant that music continued to play a central role in his life. At Andover, he took violin lessons and sang in the orchestra choir, and he studied in the composition seminar with Michael Gandolfi. Whereas at the Manhattan School of Music Pre-College program, his composition lessons revolved primarily around writing for solo piano, at Andover he began writing music for his peers. In his senior year, he presented a full

¹¹⁷ Interview with the composer: January 30, 2019.

¹¹⁸ The school is commonly referred to, simply, as “Andover.”

¹¹⁹ Interview with the composer: January 30, 2019.

recital of composed works. The earliest works in his current catalogue are from this period at Andover.

Following his graduation from Andover, Perich attended Columbia University, where he studied mathematics and computer science in addition to music and then went on to do graduate work in the Interactive Telecommunications Program at New York University's Tisch School of the Arts. This innovative program is not targeted specifically at musicians or artists, but rather focuses on the creative use of technology in general.¹²⁰ The fact that this educational trajectory eventually led to a career as a successful composer is somewhat unusual. While the University's stranglehold of power on the broader field of composition (a state of affairs that was much maligned by Downtown-affiliated composers during the years of the Uptown/Downtown divide) has weakened considerably, a handful of composition programs do have an outsize presence in the field. Yale and Princeton are the universities most closely associated with composers who played key roles in the development of the New Music Community.¹²¹ Additionally, while it is not unheard of for composers to have also studied in other fields, especially during their undergraduate work, it is more unusual for composers not to have pursued graduate work in programs focused specifically on composition.

When Perich attended the first Bang on a Can Summer Festival in 2002 as a composition fellow, his fellow participants included a number of the musicians who went

¹²⁰ NYU has often described the ITP program as a "Center for the Recently Possible."

¹²¹ Yale also played a key role for some composers of the Totalist generation, including Julia Wolfe, who highlights the importance of her experience there and its impact on the development of Bang on a Can in her dissertation: Wolfe, "Embracing the Clash."

on to be central players in the development of the New Music Community. These include composer and co-founder of both New Amsterdam Records and NOW Ensemble, Judd Greenstein; composer and founder of Victoire as well as Luna Composition Lab, Missy Mazzoli; clarinetist and founding member of Newspeak, Eileen Mack; composer and founder of Carlsbad Music Festival, Matt McBane; saxophonist and eventual music curator at the Experimental Media and Performing Arts Center (EMPAC), Argeo Ascani; and flutist and co-founder of Ensemble Pamplemousse and performance duo On Structure, Natacha Diels. Perich had developed an interest in Bang on a Can after seeing a performance by the Bang on a Can All-Stars while still in high school. While his participation in the Summer Music Festival would mark his first official involvement with the group, Bang on a Can would go on to play an important role in his career as it unfolded.

Perich's first creative outlet was music, but he was also interested in computers and programming from an early age. Largely self-taught, he learned how to program in middle school and applied his skills to a broad array of projects, both creative and commercial. While fluency with technology and learning coding are relatively common among young people today, when Perich was growing up these interests aligned him with a smaller community of creative tech users that, in some respects, can be thought of as a late-twentieth-century subculture. Rather than viewing programming as a vehicle for artistic pursuits during his youth, Perich focused on the development of software for less rarefied applications and also did web design.¹²² While mainly a hobby — albeit a hobby with an entrepreneurial flavor — Perich's early development of these basic

¹²² In an interesting point of confluence, Perich designed the original website for New Amsterdam Records.

technological skills would become an important platform for later creative development. The intersection of artistic and technological practices would eventually become a central component of his work; however, his parallel interests in technology and music would remain on essentially separate tracks until his college years. Having been born in 1982, Perich is part of the older sub-group within the Millennial generation, a general age bracket he shares with many of the key individuals who were focused on building the foundational institutions of the New Music Community. Interestingly, one of the characteristics often used to delineate the specific qualities of members of the older Millennial (or “Xennial”)¹²³ generational bracket, is their relationship to technology — having come of age as the Internet was becoming, but had not already become, ubiquitous. Growing up during this unique period of technological development casts Perich’s childhood interests in programming in a fascinating light. While young Perich’s interests in mathematics and programming had previously not interfaced with his musical pursuits, his work with Douglas Repetto at Columbia University and his graduate work in the ITP program at NYU facilitated his interest in merging technology and artistic practices in a more tangible way.

¹²³ Business Insight Essentials (website), “Xennials: the Latest Micro-Generation Everyone’s Talking About,” accessed March 21, 2019, http://bi.galegroup.com.proxy.library.cornell.edu/essentials/article/GALE%7CA513832563?u=nysl_sc_cornl . There is some controversy about the genesis of the term itself: Sarah Stankorb, “I Made Up *Xennial* 3 Years Ago, So Why Is a Professor in Australia Getting All the Credit?,” *Vogue*, July 6, 2017, <https://www.vogue.com/article/what-is-a-xennial-definition-attribution#> .

Developing a One-Bit Practice

In 2005, *1-Bit Music* was released on Cantaloupe, Bang on a Can's recording label. This remarkable album is actually not a recording at all — rather, it is an aesthetic object that synthesizes electronic music. Cleverly housed in a conventional CD jewel case, each *1-Bit Music* album contains a microprocessor (pre-programmed to “perform” the album's tracks), a battery, simple track controls, volume control, and a headphone jack. In effect, *1-Bit Music* detours around the normal layers of separation that exist between the composer and listener in recorded music, and delivers a “live” musical performance of Perich's digital score directly from the encased sound circuit to your headphones. This unusual approach resonates in interesting ways with Philip Auslander's discourse on “liveness.”¹²⁴ While he posits that the concept of “liveness” only emerged as a result of technologies that made something *other than liveness* a possibility, *1-Bit Music* utilizes technology and the material conventions of the music industry to repurpose the tropes of listening to recorded music for what is effectively a live performance of electronic music.¹²⁵ In many respects, this is the inversion of the history of recorded music, which traditionally placed a premium on the illusion of live performance; in *1-Bit Music* physical consumer recording tropes are emphasized but a

¹²⁴ Philip Auslander, “Digital Liveness: A Historico-Philosophical Perspective,” *PAJ: A Journal of Performance and Art* 34, no. 3 (September 2012), 3. Auslander's general position on liveness is that “liveness is not an ontologically defined condition but a historically variable effect of mediatization.” By incorporating considerations of technology and mediatization into his theorizing on liveness, he approaches the topic from a differing perspective than that of scholars like Peggy Phelan, who emphasize the ephemerality of the present and the physical presence of a human performer. (Peggy Phelan, *Unmarked: The Politics of Performance* (London: Routledge, 1993), 46.)

¹²⁵ Philip Auslander, *Liveness: Performance in a Mediatized Culture* (Abingdon: Routledge, 2008).

recording does not actually exist. By taking the reins of the technology involved in the production of this album, Perich both found a true integration of his interests in music and technology and positioned himself as an outsider to existing musical institutional practices in favor of a DIY approach that was echoed in the broader community-building mentality that existed in the New Music Community at the time. *1-Bit Music* was heavily influenced by his work with Douglas Repetto at Columbia University, as well as Perich's affiliation with the Chiptune¹²⁶ scene¹²⁷ and the dorkbot community at the time.

Perich's clever conceptual use of the material conventions of CD packaging accentuate the unusual positioning of the *1-Bit Music* project. Recorded music had perhaps never been more ubiquitous than it was in the late 1990s and early 2000s. The emerging universality of the MP3 format, its utility for file-sharing, and the emergence of online file-sharing resources like Napster meant that it was easier to disseminate and copy audio recordings than at any time since recorded music emerged in the late 1800s.¹²⁸ As Jace Clayton has noted: "The speed with which digital audio zips from one place to another has shrunk the world, short-circuiting business models and scrambling

¹²⁶ Malcolm McClaren, "8-Bit Punk," *Wired*, November 1, 2003, <https://www.wired.com/2003/11/mclaren/>. Chiptune music has a history going back to the 1980s rooted in microchip-based audio systems in home computers and video game systems of that era. The genre experienced a resurgence of popularity in the early 2000s that was characterized in part by nostalgia for the lo-fi quality of the electronic sounds produced most commonly at a bit depth of 8 bits. (Audio CD formats use the much higher bit depth of 16 bits, by contrast, to produce realistic-sounding recordings of acoustic instruments and human voices.) For a useful overview of the history of Chiptune music and its technological roots, see: Kevin Driscoll and Joshua Diaz, "Endless Loop: A Brief History of Chiptunes," *Transformative Works and Cultures 2* (2009).

¹²⁷ Nick Hallett, "Tristan Perich," *BOMB Magazine*, November 23, 2009. <https://bombmagazine.org/articles/tristan-perich-1/>. "I don't even remember what the first chiptunes show I did was, but I immediately found myself fully in that scene."

¹²⁸ Jonathan Sterne, *MP3: The Meaning of a Format* (Durham and London: Duke University Press, 2012), 27.

lines of influence. The overwhelming availability of music that results from this proliferation and portability is altering our conception of it in ways we're only beginning to understand."¹²⁹ Given this context, *1-Bit Music* went against the grain of listening practices for music consumers at the time. Its tongue-in-cheek packaging visually referenced the hastening obsolescence of the CD format, while its inherent structure as a circuit for live electronic music performance (as opposed to a recording) meant that its materiality was non-negotiable.¹³⁰

"One-bit music" is a term used by Perich to refer to his use of simple microchips to produce electronic sound. This terminology can be thought of in relation to the "eight-bit music" that is central to Chiptune music.¹³¹ One bit is the smallest unit of digital information and can be understood as having the capacity for a binary function (on/off, for example). Perich programs simple microchips using binary code that alternates between ones and zeros at differing rates, determining pitch. The quality of the sound produced by these simple chips is lo-fi and reminiscent, fundamentally, of the simplest audio functions of everyday electronic devices, like a microwave oven's alarm or a

¹²⁹ Jace Clayton, *Uproot: Travels in 21st-Century Music and Digital Culture*, (New York: Farrar, Straus and Giroux, 2016), 58.

¹³⁰ Theodor Adorno, "On the Fetish Character in Music and the Regression of Listening" in *The Culture Industry: Selected Essays on Mass Culture*, ed. by J. M. Bernstein (London: Routledge, 2001). It is tempting to wonder what Adorno would make of this, given his criticism of a new performance style in the commercial recording era in which: "The performance sounds like its own phonograph record." In a very real sense, *1-Bit Music* is both a live performance *and* its own record.

¹³¹ The most common bit depth used in Chiptune music is eight bits, which is low enough to limit sound production to a lo-fi aesthetic. From this perspective, reducing bit depth to a single bit can be thought of as a radical intensification of the lo-fi ideology of the Chiptune scene. While there is some overlap between Perich's work with one-bit electronics and the Chiptune scene (especially with his work in this area in the early 2000s, which was a time of renewed interest in Chiptune music), it would be erroneous to think of Perich's one-bit practice as emerging wholly from or being crafted entirely for the Chiptune scene.

digital wristwatch's chime. It is an unusual way to use these microprocessors, and has been referred to by Jeff Snyder as "audio hacking."¹³² The concept of audio hacking is most broadly known in relation to Circuit Bending, in which consumer electronics are repurposed in creative ways to perform functions other than their intended use. While there is an element of this spirit in Perich's one-bit practice, his ultimate aims are less materially derivative and are part of a broader philosophy that differs substantially from Circuit Bending culture. The use of simple microchips in various "one-bit" applications is one of the central characteristics in Perich's body of work.

In 2005, Perich wrote *Slowly Next to Her*, a work for solo piano and sine waves that represented his first foray into electroacoustic music. *Slowly Next to Her* is a piece for Yamaha Disklavier. As opposed to most of Perich's electroacoustic music, in which his construction of the hardware components is central to his practice, the Disklavier itself is the vehicle for both the electronic and the acoustic sounds in *Slowly Next to Her*. Interestingly, while Perich had been supremely interested in both music and technology from a young age, he had never previously composed a work that incorporated acoustic musical performance and electronic sound before. Perich was quoted in 2008 as saying: "I really hated — and still kind of do — most electroacoustic work... There are a lot of complications in it — a lot of it is kind of alien. Sometimes that's great, but I never thought electronics would be a part of my music."¹³³

This aversion to electroacoustic music can be understood both aesthetically and philosophically. Maintaining a close understanding and control of the methods of sound

¹³² Katie Palmer and Madhu Venkataramanan, "Microchip Melodies," *Scienceline*, January 26, 2011, <https://scienceline.org/2011/01/microchip-melodies/> .

¹³³ Kurt Gottschalk, "Tristan Perich: 1-bit wonder," *Wire*, November 2008, 18.

production lends an immediacy to composition that is lost when using complex digital audio software; at the same time, using software programs created by corporations to create music inherently complicates the role of the composer by placing them in a problematic¹³⁴ relationship with a corporate entity. Perich has identified the following as important concepts in his work: “agency as consumers, understanding the power structures coded in the technology we use, the consequences of using tools that we don't understand, [and] the importance of building our own tools.”¹³⁵ The widespread use of software programs such as Ableton Live, Reason, and Logic certainly provides composers with a tremendous array of tools to develop and craft sound for use in their creative work, but the exchange of easy access to variety and scope for a lack of control over the exact parameters of production is unappealing to Perich. He had the following exchange with composer/performer Nick Hallett on the subject:

Nick Hallett: Cory Arcangel has talked about how a lot of artists who use industry-standard software applications are playing second fiddle to the technology they're using. The software becomes the art.

Tristan Perich: Yeah, it's a criticism I hear all the time, for example with Max/MSP music. Tools are important; the more we understand the tool, the better. That's why I work with my own hardware and write my own software. For the new album, I rewrote the software in Assembly Language, which is a programming language that fewer and fewer people use as time goes by, but it's also the language of the machine itself. Any instruction I write in Assembly Language is directly interpreted by the machine instead of being compiled into the code by other software. So I'm working with the raw instructions

¹³⁴ To be clear, this relationship may not be viewed as being problematic by many composers, but is so viewed by Perich.

¹³⁵ Email exchange with Tristan Perich: March 17, 2019.

that the machine executes, getting one step closer to the flow of electricity through the microchip.¹³⁶

Producing sine waves is one of the most basic functions of electronic sound production, and it is telling that in his first electroacoustic work, Perich found a way out of his aversion to electroacoustic music by using electronic sound at its most basic, nearly tangible level. Subsequent to this work, he would further refine a methodology for working in an electroacoustic idiom in which he minimizes problematic relationships with corporate entities by building and programming his own hardware.¹³⁷ This alternative electroacoustic approach derived largely from the developing one-bit practices of projects like *1-Bit Music*.

In 2006, Perich wrote his first electroacoustic chamber work incorporating “one-bit music,” *For Argeo*, for solo baritone saxophone and two channels of one-bit sound, written for Argeo Ascani. For the first time, this work integrated the material and programming practices that informed his work on the *1-Bit Music* album and the Minimalist-influenced acoustic music practices that he had been developing since his youth. This integrated form would become the basis of the majority of his musical output going forward.

¹³⁶ Nick Hallett, “Tristan Perich,” *BOMB Magazine*.

¹³⁷ It should be noted that discussions of corporate control and electronic audio software throughout this dissertation are channeled through the perspective of Perich himself, and, more broadly, a contemporary American context. This dissertation does not provide the scope to investigate non-commercial audio/musical technology practices from other historical periods or cultural contexts. Their absence here should not be inferred as a suggestion that they do not exist or are of little importance, nor do I doubt that the sum total of audio electronic practices globally may very well not fit into the framework as described herein. However, this dissertation will focus on the technological cultures and practices that are most relevant to Perich in the interest of pursuing the most efficient manner of investigating the topic at hand. It should also be noted that all of the programming tools that Perich uses are open-source.

While the noisy lo-fi square-wave-type sound of much of Perich's one-bit music¹³⁸ can vary dramatically from that of the radiant sustained sine waves used in *Slowly Next to Her*, the commonality is that the nature of both of these sounds are fundamental components of electronic sound. As a student at Columbia, he was interested in exploring the physical nature of the sound production capabilities of conventional musical instruments. The world of computer-produced electronic sound, by contrast, seemed unmoored. Feeling disconnected from the process of the sound's genesis meant a lack of interest in incorporating electronic sound into his musical language, a language that he describes as being fundamentally Minimalist and process-oriented. As he has stated:

I grew up on minimalist music and minimalist art and their conceptual completeness kept me away from using electronics in my own formal work. The computer could always do too much; it didn't really have an identity like a violin did, for example. That all changed when I began working with microchip-based art and music¹³⁹

It was not until he began to work with electronic sound reduced to very basic elements and was faced with the extreme limitation of parameters entailed therein that he was able to engage with electronic sound and discover a creative path forward for creating electroacoustic music.¹⁴⁰

¹³⁸ Perich uses the terms "1-bit music," "1-bit electronics," and "1-bit tones" more or less interchangeably to describe these electronic components of his work. In this dissertation, these terms can also be understood to essentially refer to the same thing.

¹³⁹ Patrick Strange, "1-Bit Symphony: An Interview with Tristan Perich," *Filter*.

¹⁴⁰ SoundNotionTv, "SoundNotion 86: The Incredible 1-Bit Machine," YouTube Video, 1:15:28, September 30, 2012, https://www.youtube.com/watch?v=d6k4rBtLG_E .

Armed with a new framework for making electroacoustic music and a bright reputation as the innovative young voice responsible for the remarkable *1-Bit Music* album, Perich leveraged his relationships with performers in the New Music Community to produce new works for chamber ensemble and one-bit electronics. In just the two years following the composition of *For Argeo* (2007-2008), Perich composed fourteen substantive pieces in the one-bit electroacoustic format, ranging from a work for solo piccolo and single channel of one-bit sound (*A/B/C/D*) to *What's thought of as a boundless, continuous expanse...* for five sopranos and fifteen channels of one-bit electronics, and *All Possible Paths*, composed for the Bang on a Can All-Stars and one-bit electronics.¹⁴¹ In 2010, he would follow up *1-Bit Music* with its sequel following a similar format, *1-Bit Symphony*, and was also applying similar programming techniques to visual art projects including his *Machine Drawings* and *1-Bit Video* installations. By this point, Perich's reputation as the "one-bit wonder"¹⁴² was well established, and the foundation for a successful career had been laid.

¹⁴¹ *All Possible Paths* was commissioned by Bang on a Can as part of the People's Commissioning Fund program. This is a further indication of the importance of the Bang on a Can affiliation in the early years of Perich's career and its centrality to the emerging New Music Community at the time.

¹⁴² Sukhdev Sandhu, "Tristan Perich: he's a one-bit wonder," *Telegraph*, November 29, 2010, <https://www.telegraph.co.uk/culture/music/rockandpop/features/8163589/Tristan-Perich-hes-a-one-bit-wonder.html> .

Developing a Multidisciplinary Practice

In a 2008 article in the *Village Voice*, composer and Bang on a Can co-founder Michael Gordon said the following about Perich: “What I find so interesting about Tristan is that he is fluid in a number of worlds—music, visual, tech—that at one time seemed separate, but are now all converging upon each other.”¹⁴³ Thus far, this dissertation has primarily concerned itself with Perich in relation to his music and issues relevant to the New Music Community and the broader field of music. However, as Gordon suggests, developing a comprehensive understanding of Perich and his work requires stepping outside of the realm of music. In the same way that Gordon suggests the worlds of “music, visual, tech” were “converging upon each other” in the early 2000s, Perich’s own work reflects intersecting practices from these various fields. In his case, these hybrid practices are rooted in lifelong interests in and experiences with these various disciplines. While a substantial part of this dissertation has already been devoted to the development of the New Music Community and the backdrop that that provided for Perich’s development as a young composer, a thorough understanding of Perich’s work requires investigation into other communities that were similarly influential as well as relationships with influential people in his life.

While the creative inclination of his family has already been discussed as it relates to the strong musical education he received throughout his childhood, Perich’s family also has notable connections to the field of visual art. His grandmother, Virginia Dwan, is an art collector and prominent former art dealer, whose galleries in Los

¹⁴³ Jesse Jarnow, “The Tinkerer,” *Village Voice*, June 11-17, 2008, archived online at: http://www.1bitmusic.com/images/press/Tristan_Perich_Village_Voice_Large.jpg .

Angeles and New York showed influential artists including Sol LeWitt, Robert Rauschenberg, Yves Klein, Robert Smithson, and Michael Heizer. She was especially well-known for championing early works of Minimalism and Land Art in the 1960s, and a 2003 *New York Times* article referred to her as “the grande dame of the avant-garde.”¹⁴⁴ Perich’s mother, Candace Dwan, is a former art dealer as well, who focused on photography in her galleries in Katonah, New York and on 57th Street in Manhattan.¹⁴⁵ His father is the artist Anton Perich, who was born in Croatia but immigrated to Paris in the sixties and then to New York, where he became enmeshed with the underground art scene centered around Andy Warhol. Contributing photography to Warhol’s *Interview* magazine, he also worked as a busboy at the legendary nightspot, Max’s Kansas City, where he photographed the nightly debauchery and exhibited his work on the walls.

While his grandmother worked with artists of a variety of aesthetics, she described a special affinity for those like Sol LeWitt and Carl Andre whose work was “really spare and clean.”¹⁴⁶ A similar inclination towards aesthetic simplicity and clarity has also been voiced by Perich,¹⁴⁷ who has spoken repeatedly of being drawn to Minimalist music and art at an early age and has described one of the appeals of the

¹⁴⁴ Michael Kimmelman, “The Forgotten Godmother of Dia’s Artists,” *New York Times*, May 11, 2003, <https://www.nytimes.com/2003/05/11/arts/art-architecture-the-forgotten-godmother-of-dia-s-artists.html> .

¹⁴⁵ Candace Dwan Gallery ceased operations in 2008, but still maintains an online archive: <http://www.candacedwan.com> .

¹⁴⁶ Kimmelman, “Forgotten Godmother of Dia’s Artists,” *New York Times*.

¹⁴⁷ Jane Cavalier, “The Digital Literacy of Tristan Perich’s Sound,” *Hyperallergic*, October 4, 2013, <https://hyperallergic.com/86618/the-digital-literacy-of-tristan-perichs-sound/> . In a 2013 interview, he also indicated a connection between his childhood experiences with Minimalist art and his own work as an artist: “I really like music that I can potentially understand or create a model of in my mind. I think it has to do with growing up seeing a lot of minimalist art.”

one-bit electronics approach that he has developed to be that he finds the “uber-reductionist framework” to be “really expressive.”¹⁴⁸ Perich’s one-bit systems impose extreme limitations on the creative process because of the simplicity of their components. The lo-fi aesthetic that results from working within such technological constraints is central both to Perich’s work process and the overall impact of his work.

“Minimalism” has been a highly contested term in music, a state of affairs that is further complicated by its sharing of the term with the Minimalist movement in the visual arts. Jonathan Bernard highlights both the mutual relevance of the Minimalist movements in music and the visual arts, while also acknowledging that they are not perfect parallels, due in no small part to the fact that “the histories of art and music do not more closely parallel each other ... because fashions change more quickly in the former than in the latter—and this has never been more the case than in the twentieth century.”¹⁴⁹ Interestingly, while Perich was exposed to Minimalist music as well as the waves of post-Minimalism that followed it (such as the later work of Glass and Reich and the Totalism of composers from the Bang on a Can generation), he was also directly influenced by Minimalist visual art, more narrowly defined, in no small part due to his family’s close association with its genesis and his exposure to this work as a child. Perich himself has recognized the influences of both Minimalist art and music, without

¹⁴⁸ Bang on a Can Store (website), “Tristan Perich on *1-Bit Music*,” accessed March 21, 2019, https://bangonacan.org/store/music/1_bit_music .

¹⁴⁹ Jonathan Bernard, “The Minimalist Aesthetic in the Plastic Arts and in Music,” *Perspectives of New Music* 31, no. 1 (1993), 97.

completely conflating them: “I grew up listening to minimalism and going to see minimalist art, so these ideas of process-as-content have always been with me.”¹⁵⁰

Perich’s engagement with Minimalist aesthetics extends across his body of work, including his sound installations and visual artwork, embracing both “directness of image”¹⁵¹ and a rejection of “the idea of mystery, of depths that might be alluded to but were in the end hidden from the viewer” (to return to Bernard’s comparative terminology).¹⁵² For Perich, technology often plays a role in achieving this aesthetic, with one-bit technology being the most common mechanism. In another familial echo, Perich’s *Machine Drawings* project—in which murals or works on paper are executed by a pen suspended by string, controlled by small motors being operated by microchips running code that Perich programs himself—echoes his father’s early experiments in digital art. In the 1970s, Anton Perich developed a painting machine that similarly created a system of technologically mediated visual art production. While very different in affect, mechanical structure, and materials, both employ a mechanical device as an intermediary between the artist and the canvas.¹⁵³

¹⁵⁰ Michael Byrne, “Q+A: Composer Tristan Perich, Creator of the Amazing, Self-Playing 1-Bit Symphony,” *Motherboard* (blog), *Vice*, July 8, 2010, https://motherboard.vice.com/en_us/article/yppnzv/q-a-composer-tristan-perich-creator-of-the-_1-bit-symphony_ .

¹⁵¹ Bernard, “Minimalist Aesthetic in Plastic Arts and Music,” 107.

¹⁵² Bernard, “Minimalist Aesthetic in Plastic Arts and Music,” 106.

¹⁵³ Anton Perich has posted a video of his painting machine in action on his YouTube page: <https://www.youtube.com/watch?v=wWs58G39fgc> .

Developing a Creative Technological Practice

The multi-disciplinary integration of aesthetic concepts is reflected in the development of Perich's one-bit practice. While music had been his primary creative outlet throughout his childhood, when he began exploring creative applications for his technological practices while a student at Columbia, his first experiments were not focused exclusively on music.¹⁵⁴ In an introductory class on new media art taught by Douglas Repetto and then a later independent study with him centered on kinetic art,¹⁵⁵ Perich began to establish a set of practices utilizing simple microchips and other basic elements, which he programmed himself. These elements had application across a variety of disciplines.

This development of a technological practice in the pursuit of creative work marked a sea change for Perich. While he was a technology enthusiast for most of his life prior to that point, his passions for programming and music existed on totally different tracks as a child. While Perich was not primarily using technology for artistic pursuits when he was young, he was, however, specifically interested in the process of digital creation that programming facilitated. He channeled his efforts into a variety of projects, including an early software program he developed to create autostereogram¹⁵⁶ images. Other software projects touched on everything from the stock market to stop-motion animation, and he also became well-versed in web design. In the same way that

¹⁵⁴ Interview with Tristan Perich: January 30, 2019.

¹⁵⁵ Nick Hallett, "Tristan Perich," *BOMB Magazine*.

¹⁵⁶ Autostereogram images create an optical illusion by making a three-dimensional image appear from two-dimensional patterns. These "Magic Eye" images experienced a trend of heightened popularity in the mid-1990s.

Perich's solid musical education in his youth gave him the tools to later pursue a career as a professional musician, the technological and programming skills that Perich developed while working on these technology projects growing up allowed him to relatively seamlessly incorporate a technological practice into his creative work when he was eventually inspired to do so.

Douglas Repetto was the key figure who facilitated Perich's merging of his creative and technological interests. Repetto is an artist whose body of work transcends numerous disciplines, albeit with a general focus on creative technology, and he was the Director of Research for Columbia's Computer Music Center during Perich's time studying at the university. (While at Columbia, Repetto also founded the university's Sound Arts masters program in the School of Arts.) This was an especially fruitful time in Perich's creative development, and Repetto remembers Perich as "one of the most amazing undergraduates"¹⁵⁷ he has ever worked with: "Lots of undergrads talk ambitiously about what they're going to do, but everything [Perich] proposed, he did, and it was exceptional."¹⁵⁸ Many of the practices that Perich developed at this time were central to his early successes as a composer (such as *1-Bit Music*) and continue to illuminate his work today in the fields of music, sound installation, and visual arts.

Another outgrowth of this early work with Repetto, as well as Perich's time at Columbia more broadly, is Loud Objects— a trio project begun in 2005 with Kunal Gupta and Katie Shima, who were both fellow students at Columbia. In a typical Loud Objects performance, the trio uses soldering irons to build an electrical sound circuit in

¹⁵⁷ Palmer and Venkataramanan, "Microchip Melodies," *Scienceline*.

¹⁵⁸ Palmer and Venkataramanan, "Microchip Melodies," *Scienceline*.

real-time from simple materials like wire, microchips, and audio and power jacks, using an analog projector to provide the audience with a real-time view of the mechanical processes unfolding that are affecting the sounds they hear as the sound circuit is constructed. A Loud Objects event is part musical performance, part construction workshop, and ends with an art object that produces electronic sound. Loud Objects has strong connections to Circuit Bending culture and the noise music scene. Indeed, the group's first performance was for the Bent Festival, a Circuit Bending-oriented annual festival at The Tank in New York. However, as is the case with much of Perich's work, Loud Objects shouldn't be seen as being completely at home in any one scene. The project sets itself apart to a certain extent by focusing less on source materials and emphasizing transparency. A similar dynamic is true of *1-Bit Music*, which can be thought of as Perich's work that is most closely affiliated to the Chiptune scene. Whereas Circuit Bending and Chiptune aesthetics are often rooted in second-hand material artifacts or nostalgic audio timbres, Perich clarifies that these elements are not central to his own practice: "working with chips that are only capable of running at 8MHz isn't about nostalgia for antique hardware. . . it's more about focusing on the basic elements of computation itself"¹⁵⁹

Those "basic elements of computation" are exactly what Perich was learning to integrate into his creative process during his time at Columbia. While Perich participated in the Chiptune scene during this time, he never fit completely in the genre. The Minimalist roots of his interest in one-bit practices and the broadness of his vision for their creative applicability were not easily contained in any one scene or single project.

¹⁵⁹ Byrne, "Q+A: Composer Tristan Perich," *Vice*.

Building Community with dorkbot

In addition to his official duties as a faculty member at Columbia, Repetto also served as a conduit to a broader community of creative technology enthusiasts. Most prominently, as the founder of dorkbot-nyc, he established a template for IRL social engagement, community building, and exchange of ideas for a network of hackers, artists, engineers, and tinkerers who had previously been isolated (except via the internet). dorkbot defines itself as:

a monthly meeting of artists (sound/image/movement/whatever), designers, engineers, students, scientists, and other interested parties ... who are involved in the creative use of electricity¹⁶⁰

with the four stated goals of:

- giv[ing] people doing strange things an opportunity for informal peer review
- establish[ing] a forum for the presentation of new art works/technology/software/hardware
- help[ing] establish relationships and foster collaboration between people with various backgrounds and interests
- giv[ing] us all a chance to see the cool things that our neighbors are working on¹⁶¹

dorkbot-nyc was founded in 2000 by Repetto and eventually spread to dozens of cities around the world. As dorkbot flourished, Repetto's prominence as a facilitator for

¹⁶⁰ dorkbot-nyc, "About," accessed March 21, 2019, <http://dorkbot.org/dorkbotnyc/about.shtml> .

¹⁶¹ dorkbot-nyc, "About," accessed March 21, 2019, <http://dorkbot.org/dorkbotnyc/about.shtml> .

community-building and creative exchange among creative technology enthusiasts grew, and his anti-hierarchical, open-source philosophy resonated with a variety of movements like Glitch Art,¹⁶² Circuit Bending culture, and the Chiptune music scene. It also anticipated a broader social embrace of a DIY mentality in the aftermath of the 2008 financial crisis. Perich's interactions at Columbia with Repetto coincided with the early years of dorkbot, and his engagement with blossoming creative tech communities such as dorkbot and the Chiptune scene at the time had important impacts on the development of his creative practice and the way in which his art and music was received.

Repetto was compelled to start dorkbot when he moved to New York to begin working at Columbia, having previously taught at Dartmouth. Moving from rural New Hampshire to New York City, he realized that he had an opportunity to connect in person with a larger network of people who might have similar interests in electronic art and creative uses of electricity. He wanted to “expand socially and collaboratively”¹⁶³ in this new environment, and so he put out a broad call for an informal get-together on December 6th, 2000 that he has described subsequently as “an adult show-and-tell.”¹⁶⁴ While the initial turnout was small, it became a regular event that provided both social connection and an opportunity for feedback from peers about new projects. dorkbot spread to London a year later, and would eventually have more than one hundred chapters globally. While each chapter adheres to the original mission statement and

¹⁶² Rosa Menkman, “Glitch Manifesto,” *Sunshine in My Throat* (blog), accessed April 5, 2019, <http://rosa-menkman.blogspot.com/2010/02/glitch-studies-manifesto.html> .

¹⁶³ Rachel Metz, “The Geek Mind Behind dorkbot,” *Wired*, April, 24, 2006, <https://www.wired.com/2006/04/the-geek-mind-behind-dorkbot/> .

¹⁶⁴ Metz, “Geek Mind Behind dorkbot,” *Wired*.

remains connected to the broader network of the group, the expansion was not a top-down undertaking. Rather, each new dorkbot chapter has been started by self-motivated locals, thereby enhancing the community building capacity in any given location.¹⁶⁵

The flourishing of community that resulted from the foundation of dorkbot and related initiatives¹⁶⁶ is paralleled by the evolution of the New Music Community in many ways. Enhancing accessibility and emphasizing community building by stepping away from academia and existing institutions, a deemphasis on previously important discipline or hierarchy categorizations, and a DIY attitude that compelled both creative collaboration and the establishment of new organizations and institutions reflective of the emerging community's values are hallmarks of both of these communities' trajectories. Perich was beginning his career as a young composer in New York when both the New Music Community and the creative technology community centered around dorkbot were getting off the ground and developing into agents of significant cultural impact. Given Perich's existing parallel interests in programming and music, it is hard to imagine a more fertile environment in which Perich could have done his university work and begun his career.

As with the New Music Community, many of the cultural norms and values that became associated with dorkbot must be considered in relation to broader cultural

¹⁶⁵ While dorkbot-nyc is not still a regularly-meeting group, active chapters remain in other locations around the world. For an in-depth look at a dorkbot branch in a different city, see Annalee Newitz, "The Art of Living Dangerously," *New Scientist* 15 (July 2006), <http://karenmarcelo.org/newscientist/>.

¹⁶⁶ Other related initiatives include ArtBots: The Robot Talent Show, the Bent Festival, Blip Festival, and Maker Faire.

trends that developed in the first years of the twenty-first century. These include a “small-a” anarchist-flavored distrust in established institutions, an interest in community building, the structuring of organizations in a manner reflective of the community’s social values, and a rejection of top-down hierarchy and rigid power structures. While Repetto has solid credentials as an established artist and career associations with major Ivy League institutions, the manner in which he structured dorkbot can be viewed as an attempt to create a community in which establishment credentials are not a prerequisite, giving everyone the same opportunity to present ideas on a level playing field.¹⁶⁷ In the *Chronicle of Higher Education*, Daniel Engber suggests that: “[Repetto] hoped dorkbot meetings would provide a venue for frustrated electronic artists without the connections that come with a fancy degree, and give people with ‘zero credentials and zero potential’ the chance to present whatever weird stuff they happened to be working on.”¹⁶⁸

Repetto grasped that building this community required working outside the existing academic and institutional structures.¹⁶⁹ Even though he had access to Columbia resources, and made use of them when convenient, he did not create dorkbot within the confines of a Columbia program. Access remained a priority and the refusal to constrain his effort at community-building by restricting it to the confines of an existing

¹⁶⁷ This model of an artist with prestigious academic credentials building community institutions committed to non-hierarchical accessibility is yet another parallel with many prominent composers and performers affiliated with the emergence of the New Music Community in the early 2000s.

¹⁶⁸ Daniel Engber, “People Doing Strange Things with Electricity,” *The Chronicle of Higher Education* 51, no. 15 (December 2004), A56. <https://search-proquest-com.proxy.library.cornell.edu/docview/214681556?pq-origsite=summon&accountid=10267> .

¹⁶⁹ David Poratta, “Geeky Electronics Provide an Excuse for Creative Camaraderie through dorkbot,” *Columbia News*, February 27, 2006, <http://www.columbia.edu/cu/news/06/02/dorkbot.html> . “‘You needn’t be an artist or a famous scientist,’ [Repetto] stresses, ‘just enthusiastic about the work you do.’”

institution is one of the characteristics that allowed dorkbot to grow into such an impressive movement. While Repetto is an artist, in establishing dorkbot he was not attempting to create a collective of artists who share his aesthetic. In fact, he was not even interested specifically in artists, as engineers, scientists, designers, and those without an affiliation are equally welcome to present at dorkbot.¹⁷⁰ The focus was on community-building and providing an accessible platform for critique and collaboration: “The idea of dorkbot was to reach people who had nowhere to talk about these projects... Some might appear in a gallery, perhaps, but many are too odd, or they’re unfinished, or it’s not even clear what they are.”¹⁷¹

The primary function of dorkbot is not to create work with a certain perspective or with a certain goal in mind, but to foster a community organized around shared values and practices. In this way, dorkbot is unlike a traditional art movement, but quite similar in focus to the young musicians who developed the New Music Community out of the rubble of the Uptown/Downtown divide. As dorkbot flourished, it also fostered new collaborations, projects, and institutions. In 2002, Repetto founded *Artbots: the Robot Talent Show*, an annual exhibition for robotic art that has drawn submissions from around the world. While clearly more tailored to Repetto’s personal interest in the implications of technology practices in specifically artistic applications, relative to dorkbot’s broader focus, ArtBots still retains aspects of the open, non-hierarchical ethos

¹⁷⁰ Poratta, “Electronics Provide Excuse for Camaraderie,” *Columbia News*. “Repetto: ‘I didn’t want to say art, or science, or engineering, or design,’ he says, ‘because all those things are interesting and meld into one another. And when you add them together, that’s when the really neat stuff comes out.’”

¹⁷¹ Alec Wilkinson, “Dept. of Invention Incomprehensible,” *New Yorker*, June 7, 2004, 41.

that is central to dorkbot: “We have no fixed definition of what qualifies for the show; if you think it’s a robot and you think it’s art, we encourage you to submit.”¹⁷²

Repetto has had a cultural impact via his own work and through his teaching at prominent educational institutions. He has also been a tremendously significant influence, however, in his role fostering and strengthening the international community of creative technology enthusiasts that grew up around dorkbot and affiliated projects. Given Perich’s own background, including an ongoing fascination with programming and strong exposure to Minimalist art and music from an early age, he was especially well-positioned to benefit from his interactions with Repetto and the broader dorkbot community in New York.

Intersecting Communities

So much of Perich’s artistic practice can be characterized as a compelling and visceral integration of the electronic and the artistic. At the same time, it is possible to view his early career as emerging from a crucible of influences at the nexus of two strong emerging communities in New York: the New Music Community and the creative tech community revolving around dorkbot. This is a compelling narrative, but it is also too general to have real meaning at the individual level. As is the case with every artist, Perich exists in a network of people, institutions, technologies, ideas, and cultural values that all interact in a unique way in informing the artist’s work. With that said, the New Music Community and dorkbot are especially important in this context because

¹⁷² ArtBots: the Robot Talent Show (website), “About ArtBots,” accessed March 21, 2019, <http://sites.music.columbia.edu/artbots/about.shtml> .

they were both coming into their own at the same time that Perich was beginning his career. The timing is remarkable. For instance, Perich's participation in the first Bang on a Can Summer Music Festival provided him with a singular opportunity to connect with other composers and performers of similar interests, and to get in “on the ground floor” of the network of musicians who would go on to play such a large role in the restructuring of the field of contemporary music in the ensuing years.¹⁷³ Had Perich been five years older, this would not have been possible; had he been five years younger, it would have played out differently. Similarly, his work with Repetto at Columbia University was transformative, but its impact was amplified by the explosive growth of the dorkbot community and the vibrant Chiptune music scene that was happening in New York at the time. Perich’s intersecting interests in music, technology, and Minimalist art interfaced with the specific chronology and geography of his college years in a way that allowed him to find receptive outlets for his developing creative practices.

In 2005, prior to the official release of *1-Bit Music* for the Cantaloupe label, Perich presented the work to dorkbot-nyc to a warm reception. In his own words: “I was so excited for it.”¹⁷⁴ This was a culmination, in many respects, as Perich was part of the broad dorkbot community and *1-Bit Music* was a major project coming to fruition. At the same time, releasing the album with Cantaloupe, Bang on a Can’s recording label, also indicates the maturation of a significant relationship that began at the organization’s

¹⁷³ Robin, “A Scene Without a Name,” 16. William Robin explores the importance of Bang on a Can affiliations to the composers of Perich’s generation in his dissertation.

¹⁷⁴ Rachel Metz, “This is No Two-Bit Music Player,” *Wired*, September 15, 2005, <https://www.wired.com/2005/09/this-is-no-two-bit-music-player/> .

Summer Music Festival just a few years prior. The release of *1-Bit Music* received lots of media attention, jumpstarting Perich's career and also clearly positioning him in a narrative about the interweaving of new music and creative electronics. With this successful first album, Perich's affiliation with both the emerging New Music Community and the burgeoning creative technology community was cemented and integrated into his public image as an artist. Perich emerged from his university years armed with a new framework for incorporating technology into his artistic process and with strong connections in the flourishing new music and creative tech communities. With this solid practical foundation and broad networks of like-minded peers, Perich had a strong foundation on which to build his career.

CHAPTER 3: The Music

Towards an Electroacoustic Minimalist Music

Perich has composed music for a large array of instruments, including strings, winds, percussion, and voice, in traditional and non-traditional ensemble formations from solo works to full symphonic orchestrations. While he has written a handful of works that exist as purely electronic pieces and his early works (prior to *Slowly Next to Her*, from 2004) are purely acoustic, the majority of his compositions are works that include acoustic instruments and electronic sound. Perich has spoken eloquently about how imposing the extreme limitations of the microchips he uses in his one-bit systems on his electronic music allows him to conceive of hardware itself as a musical instrument and, specifically, transforms the musical functionality of speaker cones: “Violins, creating tone by a vibrating string, exercise one of the most basic ways of creating sound. Speakers are similar, turning electronic impulse into the movement of air with an electromagnet.”¹⁷⁵

In other words, whereas most electroacoustic music involves acoustic instruments playing alongside electronic music being reproduced and amplified through speakers or the manipulation of acoustic instruments’ sound through live processing which is then amplified through speakers, in Perich’s electroacoustic music the speaker

¹⁷⁵ Strange, “Interview with Tristan Perich,” *Filter*.

cone itself is an instrument and serves a similar function to an acoustic instrument like a violin. This creates a fundamentally different, and arguably more traditional, relationship between the electronic and acoustic components of Perich's electroacoustic music than is common in most electroacoustic music. Unlike the experience of listening to an album of Perich's one-bit music through headphones or attending a Loud Objects performance in which lo-fi sound is fed through a single sound system, in Perich's electroacoustic chamber music, each channel of one-bit music (which can be thought of as a single instrumental line) is always assigned its own individual speaker cone.¹⁷⁶ This isolation of contrapuntal parts and the sonic spatialization it facilitates makes experiencing the one-bit sound in Perich's electroacoustic chamber music a related but different experience than hearing his other one-bit music¹⁷⁷ and subtly integrates the one-bit electronics approach into the format of traditional chamber music. This also applies to performers, as the difference between playing with a house mix being fed through an onstage or in-ear monitor (as is often the case when performing electroacoustic music) and playing among a group of spatially separated speaker cones, each playing an individual contrapuntal line, could not be more different—the latter is much more similar to the context of a traditional, all-acoustic chamber music performance environment than the former. In an interview with Nick Hallett for *BOMB Magazine*, Perich identifies the first time he worked on this type of one-bit electroacoustic chamber music as “my first glimpse at what I really wanted to get into: scoring music for acoustic instruments with

¹⁷⁶ Hallett, “Tristan Perich,” *BOMB*. Perich has acknowledged that in his early experimentations in electroacoustic chamber music with one-bit electronics, he realized the importance of having acoustic and speaker cone instruments “playing parts that were similar in scale.”

¹⁷⁷ Such as *1-Bit Music* and *1-Bit Symphony*.

electronics.”¹⁷⁸ Clearly, this type of music is an important component of his catalogue and, also, provides insight into his broader compositional practice.

The characteristics of Perich’s one-bit speaker cone “instruments” in turn influence the instrumental writing in Perich’s music. Often, his electroacoustic music develops textures in which the electronic and acoustic parts are integrated into a unified sonic aesthetic. The timbral limitations and binary functionality of one-bit music dovetail with Perich’s longstanding interest in Minimalist compositional techniques and aesthetics, stretching all the way back to his childhood. These techniques often limit variety or flexibility in rhythm, timbre, pitch, or dynamics to foreground motivic and textural patterns and to make the structure of a work transparent. As Steve Reich famously proclaimed in *Music As a Gradual Process* (1968): “What I’m interested in is a compositional process and a sounding music that are one and the same thing.”¹⁷⁹ This emphasis on total transparency is often recognized as a characteristic of the earliest Minimalist pieces of music, and it is this subsection of Minimalist music that is most widely agreed upon as relating directly to Minimalist visual art.¹⁸⁰ As Jonathan Bernard indicates, composers of these early Minimalist pieces of music, “in their efforts to direct the listener’s attention away from the creative process expressed as something going

¹⁷⁸ Hallet, “Tristan Perich,” *BOMB*.

¹⁷⁹ Steve Reich, *Writings on Music, 1965-2000*, ed. by P. Hillier (New York: Oxford University Press, 2002), 35.

¹⁸⁰ With the caveat that some scholars, and sometimes the composers themselves, refer to music beyond the earliest Minimalist works in the 1960s as “post-Minimalist.” There is no consensus on the usage of the terms Minimalist and post-Minimalist, resulting in some degree of confusion. It seems likely that the difficulty in agreeing on terminology has to do with a disagreement regarding what is being described— a technique, an aesthetic, a historical period, a community? — as Timothy Johnson argues in: “Minimalism: Aesthetic, Style, or Technique?,” *Musical Quarterly* 78, no. 4 (Winter 1994), 741–73.

on *in the work of art* and towards the actual *sound* of the finished product,”¹⁸¹ closely reflected values by visual artists at the time like Carl Andre, Donald Judd, and Frank Stella who were reacting strongly against Abstract Expressionism in their attempts to draw attention to the work itself (not the artist). While Perich began composing decades after this short window of time in the 1960s when the purest form of Minimalism was being developed in the visual arts and music, the spirit of these foundational Minimalist principles have clearly been translated into his own creative process. As he has stated: “It is the writing of the ruleset that is itself a creative process, and the ruleset creates the realm of possibilities.”¹⁸²

Examples of a broadly Minimalist approach to instrumental writing can be seen throughout Perich’s early compositions, in works like *Month* for solo piano (2000), *Colors* for string quartet (2002), and *Lit* for three sopranos and piano (2004). As Perich’s use of one-bit electronics in electroacoustic chamber music developed in the 2000s, his instrumental writing evolved from what might be thought of as relatively traditional Minimalist techniques to his own more singular and identifiable approach within a Minimalist aesthetic. By 2009, a piece like *qsqsqsqsqqqqqqqq* for three toy pianos and three channels of one-bit electronics clearly demonstrates one prominent mode of the unique instrumental writing style that Perich has developed in which the one-bit speaker cone instruments and the acoustic instruments are fully integrated. (One way of thinking about the integrated approach used in *qsqsqsqsqqqqqqqq* might be as a combination of the timbre-oriented early Minimalism of La Monte Young or Charlemagne Palestine

¹⁸¹ Bernard, “Minimalist Aesthetic in Plastic Arts and Music,” 101.

¹⁸² Email exchange with Tristan Perich: March 17, 2019.

with the repetition-oriented early Minimalism of Steve Reich or Philip Glass.) This approach still falls recognizably within a broadly Minimalist aesthetic, but is also uniquely and identifiably Perich's own.

Towards New Minimalist Instrumental Techniques

As Perich developed a distinctive structural relationship between electronic and acoustic elements in his music and a more specific style of Minimalist instrumental writing, there were implications for the humans performing the acoustic instrumental parts of his electroacoustic work. These works require performers to master specific technical challenges and modes of performance that are related to characteristics of one-bit music. Any time that a musician performs in an electroacoustic context, there is a fundamental tension between the mechanical perfection of the electronics and the human variability of the performer. This can lead to a variety of challenges. In a work centered on electronic processing of acoustic performance, the requirement of a performer to adhere closely in execution of dynamics or tempi from performance to performance to ensure that they trigger or interact with electronic settings in a predictable way can add an additional layer of difficulty.¹⁸³ In a work with acoustic instruments and fixed media track(s), negotiating tempo and dynamic balance and coordinating attacks or abrupt changes with an inflexible electronic component can be a

¹⁸³ Often, a stage monitor is used in works like this to assist performers to more clearly hear and understand the relationship between themselves and the electronic processing. Stage monitors are never used in Perich's one-bit electroacoustic chamber music because the electronic sound being produced is not being fed through a house system and therefore cannot be re-channeled.

challenge.¹⁸⁴ Neither of these formats, however, is exactly relevant to Perich's electroacoustic chamber music. Because the speaker cone itself is functioning more as an actual instrument with a single independent melodic line than as a separate and broader source of sound in Perich's music, the experience for the human performer is closer in some ways to conventional chamber music, and the resulting challenges can almost be thought of as the need to develop strategies to perform chamber music effectively with non-human partners.

The emergence of Minimalist music beginning in the 1960s required new technical demands of instrumental and vocal performers. These include maximum precision in rhythmic relationships between parts, the ability to reliably execute identical repetitions of musical material over and over again, and extreme endurance. Perich's music uses these fundamental Minimalist instrumental techniques as a baseline, but often expands on them. In an early acoustic work like *Month* (2000) for solo piano, elements of traditional Minimalist piano technique are apparent: the need to execute exact repetitions of repetitive identical motives, the endurance required in long passages of interlocking figurations without meaningful rests, the juxtaposition of discordant rhythmic structures, and unyielding textures that push every contrapuntal line to the foreground of the texture. These elements are familiar to anyone acquainted with the repetitive arpeggiations in keyboard writing by Philip Glass, the use of hocketing chords to drive rhythmic energy and establish harmonic content in Steve Reich's ensemble piano writing, or the disorienting shifting rhythms underlining motivic material

¹⁸⁴ Often, a click track for performers or a conductor with a click track that is synchronized with the electronics part is used in works like this to assist performers in their attempt to adhere to the fixed electronics track.

that is common in David Lang's solo piano works. While *Month* might be identifiably Perich, it predates the more substantial developments in keyboard technique that are especially prominent in his work subsequent to his incorporation of one-bit electronics into his electroacoustic music.

In a later piece like *Dual Synthesis* from 2009 for harpsichord and four channels of one-bit electronics, many fundamental Minimalist keyboard techniques remain, but they are complicated by additional technical aspects that are related to the one-bit electronics parts. The overall speed of the work teeters on the edge of feasible playability. Playing figurations in constant thirty-second notes with a quarter-note pulse at one hundred beats per minute is extremely challenging to begin with, but is made even more difficult by the relentless lack of rests in the harpsichord part, the need to remain in perfect synchronization with the one-bit electronics parts, and the eventual rhythmic shifts in the electronics parts that add a layer of rhythmic disorientation to an already extremely virtuosic endeavor. On the one hand, the one-bit electronics parts in *Dual Synthesis* are tightly integrated with the harpsichord to an extent that is unusual in electroacoustic chamber music, emulating a more traditional chamber music environment in which the various instrumental parts often work in tandem to create a unified aesthetic experience.¹⁸⁵ On the other hand, the machine perfection of the one-bit electronics parts and their subsequent incapacity for accommodation or adjustment

¹⁸⁵ Certainly, this is especially important for many works of Minimalist chamber music in particular. Many of the most well-known works of the Minimalist repertoire feature extremely tight rhythmic integration between players, perhaps nowhere more famously than in the alternating chords between Piano 1 and Piano 2 at the opening of Steve Reich's *Music for 18 Musicians* or between the two groups of performers in Louis Andriessen's *Hoketus*. In *Dual Synthesis*, timbral and rhythmic cohesion between the electronics and the harpsichord parts are both heavily emphasized.

could not be further from the norm of a traditional chamber music experience in which performers constantly make slight adjustments to accommodate each other and to “stay in the groove.” Many Minimalist techniques are already viewed as extreme physical challenges by performers and when using these techniques in his electroacoustic works, Perich often increases the technical difficulty substantially while also eliminating any margin for error. His combination of deep integration of the electronic and acoustic parts in music that pushes the physical limitations of the performer and their instrument(s) to the extreme results in a distinctive mode of virtuosity that is rooted in Minimalist techniques, but pushes into a different league of acute difficulty. The ways in which Perich’s speaker cone “instruments” subtly become less like electronic devices and more like chamber music partners have already been discussed; by making extreme technical demands of performers in a Minimalist aesthetic in tight coordination with inflexible and unyielding electronic parts, he also compels human performers to become more like machines.¹⁸⁶

¹⁸⁶ Donna Haraway, “A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century,” in *Simians, Cyborgs, and Women: The Reinvention of Nature*, (New York: Routledge, 1991), 149-181; Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*, (Chicago: University of Chicago Press, 1999), 286. This interplay between human and electronic “performers” in Perich’s music interfaces in compelling ways with theories about cyborg music practices, rooted in Donna Haraway’s foundational description of the cyborg as a “hybrid of machine and organism.” It is clear that the integration of electronic and acoustic (human) components in Perich’s electroacoustic works have implications for both the individual performer’s instrumental technique as well as the ensemble skills required to perform alongside non-human chamber music partners. In effect, this music both humanizes the machine and mechanizes the human. As Katherine Hayles has noted: “the posthuman does not really mean the end of humanity. It signals instead the end of a certain conception of the human.” In Perich’s music, it also signals the end of conventional understandings of the “electronic” in electroacoustic chamber music.

Towards a Techno-Musical Creative Practice

A hallmark of much of Perich's work is a thoughtful balance between the human and the mechanical, the material and the abstract, the traditional and the unconventional. For Perich, the composition process itself often involves a negotiation between traditional musical practices, technological labor, design, and material assembly. For the electronic components of his works including one-bit electronics, Perich does the programming himself, which is what translates his musical ideas into sound via microchip and speaker cone. The relationship between code uploaded to microchip and the resulting sonic representation of it through speaker cone(s) can be understood in parallel to a traditional musical score that is read and brought into sonic reality by a human performer; in the same way that a musical score is a permanent artifact that retains specially formatted information that makes it possible for a human performer to read it and bring the music to life, the microchip (permanent artifact) retains the code (formatted information) that allows a speaker cone to produce the electronics part any time the sound circuit's power switch is activated. While Perich sometimes uses conventional digital audio software during the composition process to try out musical ideas, the coding that animates the electronic components in his pieces are always his own work, and the sounds are produced by simple hardware that he himself assembles into functional sound circuits.¹⁸⁷

¹⁸⁷ Byrne, "Q+A: Composer Tristan Perich," *Vice*.

Interestingly, the full written scores for Perich's electroacoustic chamber works including one-bit music could not be more traditional. Each part is written using standard musical staff notation, including the one-bit electronics parts, making them indistinguishable from the acoustic instrumental parts. This is certainly useful for performers when referencing the score for rehearsal purposes, and is an indication of the dual nature inherent to much of Perich's electroacoustic work. Fittingly, Perich has also published the source code for some of his one-bit music pieces, providing those with a programming background a deeper understanding of the music. Perich's commitment to transparency on both fronts and deep fluency in both musical and programming languages are indicative of the unique perspective he brings to the table as a creator of electroacoustic music. Perich's long-term immersion in both creative tech and musical cultures is apparent in the hybrid processes and artifacts of his work, and his comfort in toggling between tech and musical modes of thinking and working have contributed to the distinctive norms that have developed in his electroacoustic music.

Perich is a skillful pianist and often writes at the keyboard. Improvisation can play an important part in the development process for his instrumental writing. In some cases, instrumental improvisation has become a performative part of an electroacoustic chamber work as well — works like *Five Architectures* (2008) exist as a fixed one-bit score against which piano improvisation is juxtaposed. He has also given performances of works like *1-Bit Music*, which is conventionally thought of as a purely electronic work, in which he improvises on drum-kit alongside the one-bit electronics.¹⁸⁸ For Perich, improvisation seems closely related to creative and compositional processes: "It's a

¹⁸⁸ Bang on a Can Store (website), "Tristan Perich on *1-Bit Music*."

hugely important part of the writing process. I'm a pianist, really, and most of my ideas come from my improvisational approach to the instrument. Playing is a way to spew out musical ideas before refining and distilling them into lines of music that ultimately get employed into compositions."¹⁸⁹

When confronted directly with the idea of a more performance-oriented improvisational identity, however, Perich responds in the following way:

Nick Hallett: I also think that in post-Zorn New York, improvisation plays such an important role in the experimental music scene; it's almost frowned upon if you don't improvise. You'll see artists who will make a point of saying, "I'm a composer, a performer, and an improviser."

Tristan Perich: I totally do not consider or call myself an improviser. (laughter)¹⁹⁰

This is a telling exchange for a composer who has extensively performed his own works, including works that include improvisation. It indicates the specific positioning of improvisation in Perich's creative process, which in most cases seems to be more aligned with compositional creation or a logistical means of fleshing out an existing compositional framework, and less related to performative or responsive spontaneity.

As can be seen by Perich's approach to his body of work, the traditional concept of the finalized, composed work that permanently leaves the realm of the composer once it enters the realm of performance, does not fully capture his relationship to his own music. As Lydia Goehr has established, the concept of the musical work is not a fixed entity, and discourse in classical music that suggests otherwise necessarily

¹⁸⁹ Hallett, "Tristan Perich," *BOMB*.

¹⁹⁰ Hallett, "Tristan Perich," *BOMB*.

requires putting on blinders against innumerable alternative concepts and practices both directly related to Western art music and in common practice in other musical traditions.¹⁹¹ In Perich's case, a varied framework, based on a variety of musical and extra-musical considerations seems to be the norm in establishing the composer's relationship to his works. This flexible concept of what a work consists of, the variability of use of a given work, and hazy borders between composer/performer, permanent/impermanent, material/immaterial are all indicative of both Perich's work process and the way in which he views his body of work. Benjamin Piekut has posited that many experimental musicians in the post-World War II era have moved from a "repertory-work model to a database model."¹⁹² He describes this "database model" as "an ever-expanding individual database of instrumental and vocal techniques, technical setups, stylistic and aesthetic tendencies, stand-alone compositions, and highly personal approaches to improvisation, some or all of which might be drawn upon and recombined in a given performance."¹⁹³ While Perich still clearly finds value and inspiration in the creation of specific works within established parameters, the "database model" is a compelling lens through which to consider his work given his development of strongly identifiable stylistic characteristics, his traversal between roles of composer and performer, the translation of his creative processes across a variety of media, and the flexibility with which he views the functionality of at least some of his work.

¹⁹¹ Lydia Goehr, *The Imaginary Museum of Musical Works: An Essay in the Philosophy of Music* (Oxford: Clarendon Press, 1992).

¹⁹² Benjamin Piekut, "Post-War Music and Sound," in *Defining Twentieth- and Twenty-First-Century Music*, ed. by David Clarke (Cambridge: Cambridge University Press, 2018), 439-442.

¹⁹³ Piekut, "Post-War Music and Sound," 441.

In addition to his substantial catalogue of acoustic and electroacoustic compositions and his one-bit music albums, Perich has also worked outside the realm of traditional musical parameters, creating pictorial art, video, and sonic installation works. His *Machine Drawings* produce murals and drawings using simple machinery and one-bit microchips in combination with conventional ink pens; his *Linear Constructions* use one-bit circuits and cathode ray televisions to create video art; his *Microtonal Wall* and *Interval Studies* mount large numbers of speakers producing one-bit microtonal frequencies in aluminum wall hangings, creating a spatially-experienced sound installation. One-bit electronics are a common element connecting these various projects across diverse media. A conventional analysis of Perich's work as a musician or artist might examine the discipline-specific education he received in the field and relate that to his creative process and the way it plays out in discrete works. It is clear in evaluating both Perich's music and art, however, that both aesthetic ideas and technical applications cross the boundaries of artistic disciplines and modes of practice and that many of the fundamental creative processes that Perich undertakes in his work are based in technology practices, not traditional artistic or musical techniques.

Perich has often described his primary artistic inspiration as being "the aesthetic simplicity of math, physics, and code."¹⁹⁴ Given this impetus, as well as his broad exposure to the art world from a young age, it should perhaps not be surprising that Perich's artistic vision has not confined itself to music. He has eloquently described the centrality of electronics in his work and the way that it transcends disciplines:

¹⁹⁴ Tristan Perich (website), "About," accessed March 21, 2019, <http://tristanperich.com/#> . These three areas are commonly not known for their "simplicity" among the general public, or for their direct applicability to music or art. The fact that Perich views their inherent simplicity as a given, is a window into his aesthetic perspective.

Many electronic musicians consider electronics their instrument, and this is how I see my work too. My own goal is to try to understand the mechanism in the electronics, and to look at how the abstract world of logic and code interfaces with our own physical world, via speakers in my music, or pen-on-paper drawings or cathode-ray televisions in my visual work.¹⁹⁵

This aesthetic interest in process and making the inner workings visible coincides with Perich's long-standing affinity for Minimalist art. Perich's performances with Loud Objects are one of the most clear examples of this interest in making the process of producing the work visible,¹⁹⁶ but there are traces of this idea in much of his work, such as his inclusion of the printed out code in the booklets that accompany his one-bit music albums. A fundamental quality of much Minimalist music is that it strips the music bare of any elements that might obscure the underlying process and structure for the listener. In a work like Steve Reich's *Music for 18 Musicians*, there is no mistaking a change in motive, harmony, or rhythm; each element is starkly etched, repeated to the point of familiarity, and changes are deeply felt— not only heard —because of this direct and clear connection with the listener. Perich takes this concept and applies it to the technological components in his work, pulling the listener or the viewer into the work to engage closely and familiarly with the types of simple electronic systems that bring his work to life and that also surround us in everyday life.

Perich is interested in transparency in his work, in terms of material and aesthetic practices. However, he is also interested in a broader type of transparency, related to

¹⁹⁵ Strange, "Interview with Tristan Perich," *Filter*.

¹⁹⁶ In the case of Loud Objects, going even so far as using a projector for enhanced visibility.

the demystification of the digital world—something that is ubiquitous in contemporary society, but that remains a mystery to the average person. As Perich has noted:

We aren't privy to the inner workings of electronics much these days. A while has passed since televisions could be fixed by the guy on the corner, due to obscene yet entirely rationalized miniaturization. We have no ideas how our laptops work, and while we take for granted that there is science in there, most of us are as close to understanding it as magic.¹⁹⁷

While he credits the Circuit Bending movement with an attempt to refamiliarize society with the inner workings of our electronics by repurposing them in creative ways, Perich's focus is instead to provide "transparency" to the electronic components in his work.

While Perich began creating music at a young age and his compositions are some of the most identifiable of his generation, the argument could be made that the most accurate way to describe him is as an electronic artist— an electronic artist whose primary (though not exclusive) medium is sound and music, but whose operational foundation is electronics and programming.¹⁹⁸ Perich's personal interaction with technology starting from childhood, his work in educational environments that established skills relevant to his later creative process, and his development of a multi-disciplinary set of practices centered on the concept of one-bit electronics have been discussed, but other points of relation in regards to technology should also be considered. Perich was coming of age at a time when electronic practices were

¹⁹⁷ Strange, "Interview with Tristan Perich," *Filter*.

¹⁹⁸ This description sets aside some fundamental aspects of Perich's compositional practices, such as his use of the acoustic piano and improvisation. However, as the bulk of this dissertation considers Perich's work within the context of musical practice, considering his creative practices from a non-musical perspective can provide important secondary insights.

becoming more common in popular music and in which new approaches to technology were having an impact in the art world.

It should be noted that while *1-Bit Music* is a tremendously important foundation upon which the bulk of his electroacoustic chamber music is built, to a certain degree it also functions as a dance album. Perich originally developed the idea for the format of *1-Bit Music* at a salon curated by Electroclash band Fischerspooner¹⁹⁹ around 2004, a time when Perich says he was “so into electronic music.”²⁰⁰ While Perich does not consider the album to be a pop album, he does acknowledge: “I wanted to engage that pop aspect of culture... There was music inside of me that wanted to be pop music.”²⁰¹ The trajectory of popular electronic music in the United States has followed an interesting course, serving as the birthplace of key genres and practices (house, disco, hip-hop, turntablism), but also not as a broadly reliable commercial market for this music.²⁰² It was in the nineties, during Perich’s adolescence, that electronic music broke through in the mainstream in the United States after many years of being a predominantly European scene.²⁰³ This reintroduction of electronic music into the mainstream American market in the nineties has been described as a strategy to “repackage and export to America a distilled version of the electronic music it had

¹⁹⁹ One of the tracks on *1-Bit Music* is a cover of Fischerspooner’s “Just Let Go.”

²⁰⁰ Hallet, “Tristan Perich,” *BOMB*.

²⁰¹ Hallet, “Tristan Perich,” *BOMB*.

²⁰² Michaelangelo Matos, “How the Major Labels Sold ‘Electronica’ To Americans,” *The Record: Music News From NPR* (blog), August 18, 2011, <https://www.npr.org/sections/therecord/2011/08/18/139747383/how-the-major-labels-sold-electronica-to-america?ps=cprs> .

²⁰³ Certain forms of popular electronic music were consistently popular among certain demographics in the United States, but big record labels were mostly uninterested in them because of their perceived unlikelihood to be attractive to a “mainstream” audience.

created.”²⁰⁴ While rave culture had a place in the United States prior to this period, it was a localized sub-culture whose incompatibility with the format of the record industry at the time ensured its continued status at the margins with a loyal, but fringe, following. The vehicle for electronic popular music that broke through into the American mainstream was the sub-genre known as Big Beat, whose most prominent successes were British groups such as The Chemical Brothers, Fatboy Slim, and The Prodigy.²⁰⁵ Perich has noted the influence of Big Beat, saying that “it was some of the first music that I got really excited about and it was essentially where my interest in non-repeating beat structures came from;” he also describes his decision to create a performance version of *1-Bit Music* in which he played drum set live with the one-bit album as follows: “That was me throwing myself into the Big Beat electronica world.” By the time Perich was in New York for his college years, Big Beat was petering out in mainstream music. However, it was precisely in this period that the Chiptune and Electroclash scenes were exploding in New York. Both of these scenes emphasized another key interest of Perich's— the use of lo-fi electronic sounds.

Robert Fink has theorized that “disco and minimalism appear as two linked instances of a new theoretical possibility in late-twentieth-century Western music,” focusing on the modulation of teleology in musics that explicitly avoid conventional climaxes.²⁰⁶ He cites Susan McClary, who has explored the gender-related teleological

²⁰⁴ Jonny Coleman, “In Defense of Big Beat, the Annoying 90s Music Genre that Snobs Love to Hate,” *Vice*, October 14, 2016, https://www.vice.com/en_uk/article/3de5jv/in-defense-of-big-beat-love-to-hate .

²⁰⁵ Matos, “How the Major Labels Sold Electronica,” *The Record*.

²⁰⁶ Robert Fink, *Repeating Ourselves: American Minimal Music as Cultural Practice* (Berkeley: University of California Press, 2005), 9.

tendency of common practice, climax-oriented classical music and contrasted this approach with Minimalism;²⁰⁷ as well as Richard Dyer, who contrasts the phallogocentric teleology of rock music with disco's propensity for "releasing you in an open-ended succession of repetitions."²⁰⁸ The relationship between popular electronic music genres and Minimalism extends beyond disco, and can also be understood in relation to technology, as electronic musical hardware and software have often facilitated practices that are central to Minimalist music: looping, phasing, extreme durations. The continued relevance of these points of relation can be traced in Perich's incorporation of both popular electronic music practices and Minimalist music practices in his work.

At the same time that Chiptune music was experiencing a revival and Electroclash was increasingly the soundtrack of stylish nights out from New York to Berlin, the visual arts world was also being influenced by artists who were using electronics in unconventional ways. Glitch is a term used to describe a broad array of art in a variety of disciplines that produces creative work through the disruption of conventional electronics. As artist Rosa Menkman states in her "Glitch Manifesto:"

The glitch is a wonderful experience of an interruption that shifts an object away from its ordinary form and discourse... As an artist, I find catharsis in disintegration, ruptures and cracks. I manipulate, bend and break any medium towards the point where it becomes something new. This is what I call glitch art.²⁰⁹

²⁰⁷ Susan McClary, "Getting Down Off the Beanstalk," in *Feminine Endings* (Minneapolis: University of Minnesota Press, 2002), 112-131.

²⁰⁸ Richard Dyer, "In Defense of Disco" in *Out in Culture: Gay, Lesbian and Queer Essays on Popular Culture*, ed. by Corey K. Creekmur and Alexander Doty (Durham, NC: Duke University Press, 1995).

²⁰⁹ Menkman, "Glitch Manifesto," 4-6.

With its roots in the work of earlier media artists like Nam June Paik, Glitch is a response to the ubiquity of consumer electronics²¹⁰ as well as a reassertion of authority over the increasingly “black-boxed” inner-workings of the digital electronics that surround us. As Attali has suggested: “Every code of music is rooted in the ideologies and technologies of its age, and at the same time produces them.”²¹¹ The general aesthetic of Glitch is one of “cracked media”²¹² and both Circuit Bending and the Chiptune scene can be thought of as existing under a broad Glitch umbrella. Cory Arcangel, Michael Betancourt, and Rosa Menkman are some of the most prominent artists associated with Glitch art. Perich’s affiliation with the musical outgrowths of this scene could be articulated to some of his musical works (like *Dual Synthesis*) in which repetitive Minimalist figurations are subjected to momentary disruptions or in the imperfections that result from real-world interference with the suspended automated drawing system of his *Machine Drawings*. While not produced by disruption of an electronic system, both of these instances can be thought of as an embrace of a Glitch aesthetic centered on “disintegration, ruptures, and cracks,”²¹³ while not strictly a use of Glitch practices.

Thus far, this dissertation has navigated a broad and heterogenous network centered around Perich and his body of work. In this perusal, examinations have been

²¹⁰ For an interesting examination of the importance of consumer tech products to the development of Glitch music as well as a broader exploration of the Glitch music scene, see: Nick Prior, “Putting a Glitch in the Field: Bourdieu, Actor Network Theory and Contemporary Music,” *Cultural Sociology* 2, no. 3 (2008), 301-319.

²¹¹ Attali, *Noise: The Political Economy of Music*, trans. by Brian Massumi, (Minneapolis: University of Minnesota Press, [1985] 2006), 19.

²¹² Flood, “Building and Becoming,” 165.

²¹³ Menkman, “Glitch Manifesto,” 6.

undertaken of musical communities, educational institutions, personal relationships, generational discourses, communities among creative technology enthusiasts, economic structures, political movements, arts organizations, recording labels, performance techniques, creative practices in various disciplines, historical narratives of various movements in music and art, and a variety of technologies. Developing an understanding of Perich and his work requires “following the actor” across an array of fields and addressing a variety of material, personal, historical, cultural, and generational topics, both to understand the genesis of his work as well as the conditions of its creation and reception. However, up to this point we have mostly avoided an important actor that plays a key role in Perich’s work and to which most of the rest of this dissertation will be devoted— the piano.

CHAPTER 4: The Piano and Perich's Keyboard Music

“At a young age I learned to play the piano. The physicality of this massive instrument was a reminder that sound is intimately connected to action.”²¹⁴

The preceding text is the artist biography that Perich chose to use to accompany his work *Microtonal Wall* (2011) that was part of *Soundings* (2013), the Museum of Modern Art's first ever exhibit devoted exclusively to sound art. This is noteworthy for a few reasons. *Microtonal Wall* doesn't explicitly have anything to do with the piano; its fifteen hundred one-bit speakers are housed in a large aluminum wall mounting and produce a microtonal, spatialized experience for the viewer/auditor. It has never been used as part of an electroacoustic performance with a piano or any other kind of acoustic instrument and its exhibition history has more in common with Perich's explicitly visual projects (like *Machine Drawings* and *Linear Constructions*) than either his one-bit albums or his electroacoustic music. In light of this, it is compelling that Perich centers his relationship with the piano in this context, in which it is not otherwise clearly indicated. His evocation of the specific physicality of the instrument as a fundamental component in his aesthetic understanding of sound is also interesting. To the extent that Perich has become popularly known for an identifiable sound, that sound would be the lo-fi timbre of one-bit electronics. *Microtonal Wall* (as indicated by its title)

²¹⁴ Museum of Modern Art, “Tristan Perich Biography,” *Soundings* Exhibition, accessed March 21, 2019, <https://www.moma.org/interactives/exhibitions/2013/soundings/artists/10/biography/>.

generates pitches separated by microtones, something that the conventional piano is not capable of, and the shifting experience of a spectrum between white noise and constant, identifiable electronic frequencies that characterizes the piece²¹⁵ seems totally unrelated to a piano's mechanics, timbre, or functionality.²¹⁶ The foregrounding of the piano in this setting is a broader indication that the instrument is a foundational component of Perich's aesthetic cosmology.

The Piano, the Foundation

It is clear that the piano holds a place of special importance for Perich. The piano was his first instrument of study, and he often works at the piano as part of his compositional process. The majority of his early works prominently include piano, and he was generally the pianist performing (and recording) all of those early works. He has subsequently written music for most of the major instruments in the keyboard family including piano, harpsichord, organ, accordion, and toy piano. Keyboard instruments

²¹⁵ *Microtonal Wall* produces fifteen hundred microtonal frequencies simultaneously that span four octaves over a twenty-five foot installation. The experience of hearing all of these frequencies from a distance is equivalent to white noise. By approaching the installation, the experience moves away from white noise as identifiable frequencies become more apparent. By moving from side to side, one can travel up and down the four octave span of frequencies; by moving closer or further away, one can hear individual frequencies (versus white noise) more or less clearly.

²¹⁶ Roger Moseley, *Keys to Play: Music as a Ludic Medium from Apollo to Nintendo*, (Oakland: University of California Press, 2016), 104-106, 113-114. Roger Moseley traces lines of connection between *Microtonal Wall* and the isomorphic keyboards of Johann Jakob Könnicke and James Paul White. While a compelling and relevant observation, points of relation between *Microtonal Wall* and the keyboard are given greater context via Perich's centering of the piano in his artist statement for the MoMA exhibit cited here. Perich's focus on the modern piano in this context indicates a direct relation to that instrument, as unexpected as that connection seems to be.

are also the acoustic instruments on which Tristan has most often performed— not just in his formative years growing up and in the early years of his compositional career, but also as an adult in his professional life. Most prominently, in 2009 he undertook a national tour performing *Dual Synthesis* (for harpsichord and four channels of one-bit electronics) in venues from coast to coast.²¹⁷ The centrality of keyboard instruments to Perich’s musical work would be understandable based strictly on his history of piano study and on the piano’s general usefulness for composers;²¹⁸ however, as indicated in his artist biography for *Soundings*, the piano also plays a deeper and more important role, influencing a wider range of his work²¹⁹ and tying in to broader aesthetic and conceptual relationships that are important aspects of his creative output. In an interview with percussionist Peter Ferry about *Surface Image* (2013), his work for solo piano and forty-channel one-bit electronics, Perich said:

So I think of playing the piano, at least in a traditional way of fingers on the keyboard, as kind of like a digital gesture in a way... It’s a series of triggers; it’s a series of events, which are kind of these discrete objects, these discrete moments. Pressing a key is kind of like an event, and so it’s very different than...

²¹⁷ The 2009 version of *Dual Synthesis* differs somewhat from the 2011 revision, which is now the standard edition. In his early performances of *Dual Synthesis* an aspect of improvisation was retained in the harpsichord part, whereas the 2011 version does not retain this characteristic. The 2011 version is also informed by Perich’s consultations with Daniel Walden, who expressed interest in performing the work following Perich’s 2009 tour, and whose interest spurred Perich’s revisions that led to the 2011 version which is now the official score. This consultative relationship between Perich and Walden on a major solo keyboard work mirrors, in some respects, Perich’s later collaboration with pianist Vicky Chow on *Surface Image*.

²¹⁸ Many composers with a far lesser technical keyboard ability than Perich use the piano in their compositional process strictly because of its utility as a contrapuntal “playback” tool.

²¹⁹ Clearly, his centering of rhetoric about the piano in relation to a sound art piece like *Microtonal Wall* indicates a broad array of influence that crosses disciplines.

the continual motion, for instance, of bowing a string instrument like a violin. The piano sort of has this inherent patterned digital quality.²²⁰

In other words, the piano has digital tendencies— inherent aspects of its physical design and functionality mirror those of electronic circuitry and digital programming. In Roger Moseley's words, discussing the binariness of keyboards more broadly: "over time a key can represent two states: either it is depressed, or it is not. Like all digital media, the key thus offers a way to encipher or decipher, to lock, unlock, or transcode the meanings of notes and letters, and to invoke both plenitude and lack."²²¹ This fuzziness between human input and mechanical systems is reflective of Perich's relationship with the simple microprocessors that he uses to create his one-bit electronic systems. The impact of Perich's work with Douglas Repetto and the watershed of creativity that resulted from Perich's discovery of a method of working with electronic sound that felt tangible and "real" to him (as opposed to his perception of the overwhelming, unfocused nature of most software-mediated computer music) has already been discussed at length. The manner in which Perich discusses the piano and its "digital" qualities indicates that his early experiences at the piano dovetailed with his exposure to Minimalist art and the impact it had on his preference for transparent, process-oriented art. In this light, it is clear why the seeming excesses of software-mediated electronic sounds held little appeal for Perich and why he avoided composing

²²⁰ Peter Ferry, "Perich - Interview on piano as machine (5/8)," YouTube Video, February 28, 2016, https://www.youtube.com/watch?v=5_Gt4h4rIME .

²²¹ Roger Moseley, *Keys to Play: Music as a Ludic Medium from Apollo to Nintendo* (Oakland: University of California Press, 2016), 78.

electroacoustic music until he began to develop his more restrictive but more direct one-bit practice.

While in a certain respect, all instrumental playing can be viewed in a binary manner (you are either producing sound or you are not), this idea is heightened by the mechanics of keyboard instruments. At the piano, once a note has been played, the performer retains no further control over it, for the most part, except to determine when it stops sounding.²²² This stands in stark contrast to wind and string players, who can manipulate the tone along multiple parameters as long as they continue playing. In many respects, this limitation of parameters at the keyboard mirrors the simple binary commands of Perich's one-bit music. Obviously, the correlation has its limits, as keyboard players manipulate a number of parameters over the course of a piece to create musical gestures. The lo-fi timbral uniformity that generally characterizes Perich's one-bit electronics is very different from the rich sonic possibilities of the modern piano, for instance. However, when considering the production of a single note, there is a parallel in that the only parameter left under the performer's control once the key has been struck is duration, which can be considered in the simple binary terms that govern Perich's electronic music.²²³ The production of a given pitch at the piano is the result of "turning it on" by striking a single key associated with a single pitch. The parallel

²²² The minor exceptions that "prove the rule" include the sustaining capacity of organs, the reliance on breath of melodicas, limited dynamic control with accordions, and bebung at the clavichord.

²²³ Of course, percussion instruments and the harp also share this quality, but keyboard instruments are a special case in that the dampening of the tone is not performed through an active and separate action (ie, placing one's hands along the string or resonating instrument to stop its vibration), but by simply releasing the key which has sustained the tone up to that point. This more closely resembles the sort of toggle switch relationship related to one-bit electronics programming.

streams of one-bit information that combine to create the tapestry of sound in much of Perich's one-bit music might then be seen as a retranslation of the parallel keys of the piano that are binarily manipulated by the performer to create counterpoint.

Perich's description of keyboard technique using technological terminology brings focus again to the cyborg qualities of his electroacoustic music. As the incorporation of one-bit electronics became more commonplace in his music over time, the technical demands he placed on keyboard performers evolved as well. One way of interpreting the virtuosic keyboard writing of works like *Dual Synthesis* and *Surface Image* is as a hybridization of traditional Minimalist keyboard techniques with the "inhuman" qualities of one-bit music. This results in a cyborg keyboard technique that places unusual demands on human performers, and, in some cases, is extremely challenging. To be clear, this cyborg technique does not entail literal body modification²²⁴ or the direct application of technology to alter the performer's body,²²⁵ neither is it based in human performance in a highly technologically mediated format.²²⁶ Rather it is a cyborg technique born of narrowing the gap between the functional practices of the human and non-human "performers" in Perich's unique approach to electroacoustic music.

Taking a step back, it becomes apparent that the piano is an especially compelling vantage point from which to consider Perich's career and body of work. It is

²²⁴ Bonnie Gordon, "The Castrato Meets the Cyborg," *The Opera Quarterly* 27, no. 1 (Winter 2011), 94-121.

²²⁵ Lucie Vagnerova, "Sirens/Cyborgs: Sound Technologies and the Musical Body" (PhD diss., Columbia University, 2016).

²²⁶ Paul Sanden, "Virtual Liveness and Sounding Cyborgs: John Oswald's 'Vane,'" *Popular Music* 31, no.1, 45-68.

the only instrument (including electronic instruments) for which Perich has consistently composed music throughout his career. It is the most relevant instrument through which to consider Perich's approach to performance and improvisation. It is a member of the instrument class for which he has composed work of the greatest variety of instrumentations (acoustic solo, solo with sine waves, solo with one-bit electronics, acoustic duo, duo with one-bit electronics, trio with one-bit electronics, quintet with one-bit electronics, as part of acoustic chamber groups of varying sizes, as part of chamber groups of varying sizes with one-bit electronics, as part of an orchestra). It is the instrument through which he learned music, and it is the acoustic instrument that is most closely related to the hybrid one-bit creative process for which Perich has become most well known. With this in mind, the remainder of this dissertation will be an overview of key works for keyboard instruments spanning the entirety of Perich's career, an undertaking which will also involve discussion of Perich's evolving treatment of keyboard technique.

An Overview of Selected Keyboard Works

Pulse (1999)

Pulse is Perich's first listed work for solo piano. He was seventeen years old, and a high school student at Andover, when it was written. The piano is the most common instrument in Perich's earliest works, which is unsurprising given that it has been

Perich's primary instrument since childhood.²²⁷ In addition to solo works and a piano duet, the piano is paired with a wide variety of other instruments in his early chamber works including strings, winds, and voices. Perich often performed the piano parts in his own works in this period, and the recordings of these early works that are posted on his website²²⁸ are generally recordings of Perich, recorded at the time. For the purposes of categorization, works prior to *1-Bit Music* (2004) will be considered and referred to as Perich's "early period."

Perich's early exposure to and affinity for Minimalist music and art is well-established. In his early works, the impact of Minimalist music is direct and clear, and he makes use of a variety of traditional Minimalist compositional techniques across the body of these early works. This incorporation of Minimalist ideas ranges from conceptual approaches to formal structure to specific instrumental techniques and rhythmic and motivic writing approaches. While these are early works from a young person, it is clear that even at this early point in his career, Perich had already had a broad exposure to Minimalist music and developed a fluency with its fundamental aesthetic practices.

Pulse is structured around a constant eighth-note pulse onto which overlapping harmonic shifts between the pianist's two hands are overlaid. This constant rhythmic pulsation is an immediately identifiable Minimalist instrumental technique, familiar from canonical Minimalist works from composers like Terry Riley, Steve Reich, and Julius

²²⁷ Perich's first music lessons were private piano lessons in Katonah. At the Manhattan School of Music Precollege Program, Perich studied piano, percussion, and composition. At Andover, he briefly took violin lessons. Throughout this period and into adulthood, however, the piano remained Perich's primary instrument.

²²⁸ <http://www.tristanperich.com/> .

Eastman. Specific to the piano, the use of extremely long periods of repeated notes or chords without interruption is a core Minimalist technical element. Compositionally, the glacial harmonic rhythm and the gradual shifts between harmonies (never entirely introducing a new harmony without a trace of the harmony from which it came) are also broadly familiar techniques that fit squarely within the canonical Minimalist tradition.

A more unusual aspect of *Pulse* (that will remain uncommon in Perich's work going forward) is the element of indeterminacy that is introduced by the written instruction at the top of the piece to "repeat as desired..." (see figure 1). While Perich does tip his hand somewhat by writing out the first entrance for right and left hand, including rhythmic and dynamic indications, before thereafter providing only the harmonic material, he ultimately gives the performer a tremendous amount of freedom to determine the pacing of the work as it traverses the written harmonies (which have no element of indeterminacy). Perich also cannot resist specifying how the piece should end, with an additional written instruction over the last chord, which the performer should "play once;" but overall, indeterminacy structured into a work in this way is unique to this work in Perich's output.

Other modes of indeterminacy or chance play important roles in some aspects of other of Perich's works — pieces like *Five Architectures* are structured improvisations; performances with Loud Objects are subject to unpredictable sonic events as the sound circuit is built in real time; the random impact of real life conditions on the mechanical execution of *Machine Drawings* are an important component that give those drawings their character. However, much of Perich's work is also characterized by the structural

Pulse

Tristan Perich

repeat as desired... simile...

Piano

The musical score for 'Pulse' consists of five systems of piano notation. The first system is marked 'Piano' and includes performance instructions 'repeat as desired...' and 'simile...'. It features a complex rhythmic pattern in the right hand with a 'p' dynamic marking and a 'Ped.' marking in the left hand. The second system continues the melodic and harmonic development. The third system features a series of chords in the right hand and a bass line in the left hand. The fourth system shows further harmonic progression. The fifth system concludes with a 'play once' instruction and a final cadence.

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Figure 1. *Pulse* (1999), full score.

absence of chance.²²⁹ His one-bit albums are essentially machines that guarantee to produce an identical live electronic performance each time they are switched on. His electroacoustic chamber music generally compels performers to adhere very strictly to the audible electronic components as a fundamental structural requirement for the composition to hold together intelligibly. Additionally, Perich's philosophical stance regarding the use of electronics in his work (and his determination to retain total control over the hardware and software involved by doing the programming himself and overseeing the production of hardware components directly) indicates a strong interest in reducing, not facilitating, chance elements in his music and art. Viewed from this perspective, it is all the more compelling to consider the unique place that a performance instruction like "repeat as desired" holds in the broader body of Perich's work, and this aspect of *Pulse* is arguably its most noteworthy.

Month (2000)

Month is part of a cluster of solo piano works from the very earliest years of Perich's listed compositional output²³⁰ in which he explores a wide variety of technical and conceptual approaches to the instrument. *Pulse* (1999) is an unusually conceptual piece in which bare-bones piano writing is wedded to a formal structure that

²²⁹ Bernard, "Minimalist Aesthetic in Plastic Arts and Music," 96. Controlling the degree and conditions of chance is a quality that Bernard suggests was central to both musical and visual Minimalist artists.

²³⁰ As a guideline here, works that are listed on Perich's website are considered "listed," as opposed to student pieces. Perich does include numerous pieces composed at a young age, but for the purposes of this dissertation all of those listed publicly on his website will be considered part of his body of works regardless of when they were written.

incorporates a degree of indeterminacy. In *Silo* (2000), Perich steps almost entirely away from Minimalist conventions, creating a work with a more traditional narrative structure, orthodox melody/accompaniment textures, a functional harmonic language with a more rapid harmonic rhythm, and a palette of piano techniques that have more to do with the post-Lisztian piano technique of the nineteenth and early twentieth centuries than the Minimalist piano techniques developed beginning in the middle of the twentieth century.²³¹ In *Translucent Null* (2000), he charts a middle ground between more conventional solo piano writing and Minimalist techniques, creating a laid-back hybrid style that anticipates more popular music-oriented pianists like Nils Frahm, but is not especially indicative of Perich's future work. Among these pieces, *Month* arguably foreshadows most accurately his general approach to solo keyboard writing as his career developed.

Month shares important qualities with *Pulse* while also being a very different sort of work. Both pieces are tied closely to a palpable sense of constant pulsation — in *Pulse*, this consistent pulsation is explicit and is a relatively relaxed perpetual eighth note. In *Month*, the constant pulse is at the rate of sixteenth notes. However, there is not an absolutely steady stream of sixteenth notes throughout the piece (in contrast with *Pulse*); while there are long stretches of continuous sixteenth notes without interruption, sixteenth rests are also interspersed between sixteenth notes in other sections to create choppy interruptions to the steady flow of sound. However, even when rests are apparent, they do not diminish, and in some cases enhance, the perpetual awareness

²³¹ It is noteworthy that these Minimalist piano techniques were most often developed in the context of an ensemble (with the notable exception of Charlemagne Palestine). This stands in contrast to earlier Romantic piano techniques, whose primary innovations developed within the solo repertoire.

of the driving sixteenth note pulse throughout the piece. While applied differently and achieving very different effects (a hypnotic constancy in *Pulse* and a relentless driving motion in *Month*), the centrality of this constant pulsation is a core element both to Minimalist ideas of compositional structure and piano technique, and is important in both works (see figure 2).

Month taps into Minimalist piano techniques and rhythmic structures to create a sense of constant propulsion and restless energy. The writing maintains an ever-present sense of the sixteenth pulse but the feeling of rhythmic structure shifts from section to section (and sometimes within sections) between groupings of different lengths of sixteenth beats. This quasi-additive approach in which a constant pulse is sequentially emphasized in different ways by altering rhythmic patterns or groupings heightens one's awareness of the underlying pulse while also creating a restless sense of variable structure that is suspenseful and energetic. In *Pulse*, the absolute regularity of the eighth-note pulse results in the listener's attention being drawn elsewhere, highlighting the harmonic shifting that is central to that work. In *Month*, by contrast, a sense of constant pulsation remains at the forefront of the listener's perception, drawing attention to itself each time the groupings of sixteenth notes change. (See figure 2.) The differing articulation and pedal markings between *Pulse* and *Month* also indicate how much they differ, even while both being very much centered on the concept of a constant pulse. In *Pulse*, Perich writes a pedal indication at the beginning of the piece, implying that the damper pedal should be used throughout the work. By sustaining the sound, this use of the damper pedal heightens attention on the harmonies that are being repeatedly played by both hands and emphasizes the "bleed" between harmonies as the left and

Month

♩ = 90

Tristan Perich

Staccato unless otherwise indicated

The image displays a musical score for the piece "Month" by Tristan Perich, covering measures 1 through 34. The score is written for piano and is organized into seven systems, each consisting of a grand staff (treble and bass clefs). The key signature is three flats (B-flat, E-flat, A-flat), and the time signature is 4/4. The tempo is marked as ♩ = 90. A performance instruction "Staccato unless otherwise indicated" is provided. The score features a complex rhythmic texture with frequent staccato markings and various articulations. Measure numbers 6, 10, 15, 20, 25, and 30 are clearly marked at the beginning of their respective systems. The notation includes a variety of note values, rests, and dynamic markings, creating a dense and intricate musical landscape.

Figure 2. *Month* (2000), measure 1-34.

right hands take turns changing to new notes, introducing new harmonic material over the course of the work in a slow motion harmonic progression. By contrast, there are no pedal markings in *Month*, and there is an indication at the beginning of the piece to play “staccato unless otherwise indicated.” The only other articulation indications in the work are tenuto marks over every eighth note in the piece (see figure 3, measure 89), presumably indicating Perich’s desire to make these notes longer than the sixteenth notes, which are the most common note value throughout. The result is a transparent texture in which attacks are never obscured, and the alignment of every chord and figuration with the underlying sixteenth note pulse is fully audible throughout. The staccato indication is a signal of how important rhythm is in *Month* (as opposed to harmony), and the absence of pedal as a means to sustain sound or to create a lasting web of harmony in conjunction with the repetitive chords that appear frequently throughout the piece is another indication that harmony is not the primary focus of this work. While the pulse in *Pulse* is actually more literally present, a sense of constant pulsation is actually more central to the character of *Month*, whereas *Pulse* is more fundamentally concerned with harmony.

For the pianist, *Month* presents some technical challenges, but they fall broadly within the framework of traditional Minimalist piano techniques. These include the importance of keeping an absolutely steady pulse even as rhythmic groupings and motivic material changes, the need to play exact repetitions of material over and over again, a texture in which everything is in the foreground and nothing is “accompaniment,” and a need for physical endurance to play long passages of constant material without substantive rests. *Month* is really the first time in which Perich grapples

Figure 3. *Month*, measure 89-100.

with creating a varied solo piano work using Minimalist piano techniques. While *Pulse* certainly has a Minimalist aesthetic, in terms of piano technique, its requirements are so spare that it does not really compare with a more virtuosic and demanding work like *Month*. While Perich was also employing Minimalist piano writing in ensemble works around this same time (like *Contrapuntal Between Time* (1999) and *Pour Caitlyn et Katherine* (2000)), the challenges of applying this sort of writing to a solo piano piece are categorically different and present unique challenges that are less important in a work with multiple players. *Month* is the first time that Perich fully takes on the challenges of applying an instrumental technique (Minimalist piano playing) that was

primarily developed for ensemble playing to a solo piece for an instrument with a rich tradition and enormous repertory of stand-alone, large-scale solo works.

While *Month* does have a strongly coherent overall aesthetic and generally maintains tight control of the introduction of variety across numerous parameters like dynamics, texture, and range, it is more varied overall than a work like *Pulse*. This makes *Month* feel more like a traditional solo piano work and less like a purely conceptual piece, which might be an accurate description of *Pulse*. Perhaps the most striking example of this use of variety are the sections from ninety-one to ninety-two and beginning again in measure ninety-four (see figure 3), in which the texture suddenly changes to a more traditional configuration of a constant “accompanying” figure in the left hand with a more “melodic” figure in the right hand.

This surprising introduction of a less unitary texture introduces elements of textural and narrative variety in a piece that up to that point has primarily introduced variety through shifting rhythmic groupings. Another subtle but effective point of variety comes at the end of the piece. Prior to measure 114, the entire piece takes place in a relatively narrow range, from E-flat below middle C to two G’s above middle C. Starting in measure 114, Perich introduces a section of repetitive interlocking rhythms, which will be the only material from this point to the end of the piece. However, while tightly controlling that parameter of the music, he simultaneously introduces variety of range

for the first time in the piece. When this new section begins, it is centered an octave lower than anything we have previously heard in the piece. It then sequentially moves up by octave, finishing an octave higher than where most of the piece has occurred (see figure 4). By balancing elements of control and variety across the various parameters in play, Perich successfully manages to balance the inherent natures of Minimalist piano technique and solo piano music.

Figure 4. (Continues on next page). *Month*, measure 113-156. "Octave" markings included to indicate register shifts.



121

Musical notation for measures 121-125. Treble and bass staves with complex rhythmic patterns and dynamic markings.

126

Musical notation for measures 126-130. Treble and bass staves with complex rhythmic patterns and dynamic markings.

130

Musical notation for measures 131-134. Treble and bass staves with complex rhythmic patterns and dynamic markings.

134

Musical notation for measures 135-139. Treble and bass staves with complex rhythmic patterns and dynamic markings.

139

Musical notation for measures 140-144. Treble and bass staves with complex rhythmic patterns and dynamic markings.

(Octave 1)

144

Musical notation for measures 145-148. Treble and bass staves with complex rhythmic patterns and dynamic markings.

(Octave 2)

148

Musical notation for measures 149-152. Treble and bass staves with complex rhythmic patterns and dynamic markings.

(Octave 3)

152

Musical notation for measures 153-156. Treble and bass staves with complex rhythmic patterns and dynamic markings.

Duet (2002)

Duet is a raucous and demanding piece that was originally performed by Perich and Blair McMillan.²³² To a substantial degree, the piano writing in *Duet* is the most technically demanding of any piano part in any piece up to this point in Perich's career. At the time of writing *Duet*, Perich was a student at Columbia, and it was also in the summer of 2002 that he was a composition fellow at the inaugural Bang on a Can Summer Music Festival. This was a key period in Perich's development as a composer, when he was expanding both his creative skill set and his network among musicians in the new music scene in New York, including many who would go on to play key roles in establishing the New Music Community. While *Duet* is the only purely acoustic piece for two pianists in Perich's output, it is an important work in which elements that become central to his music, and especially his keyboard writing, come into focus for the first time.

By 2002, Perich had composed for the piano in a variety of pieces, both as a solo instrument and within various ensembles, and performed most of those piano parts himself. While his general affinity for Minimalist aesthetics and tendency towards Minimalist piano techniques in his keyboard writing were clear from the outset, there is a fair amount of variety from piece to piece in Perich's early piano writing and not a clear sense of an effort to craft his own unique technical approach to the instrument. In

²³² They are also the performers in the recording on Perich's website: <http://tristanperich.com/> .

Month, Perich successfully applies a number of traditional Minimalist piano techniques into a work that holds its own as an effective solo piano piece while also retaining a thoroughly Minimalist aesthetic. In *Duet*, he goes several steps further, and, in so doing, starts to develop an approach to keyboard writing that, while clearly tied to the traditional language of Minimalist piano technique, is increasingly more of his own dialect. As he developed this more individual approach to writing for the instrument, he also foreshadowed some of the technical elements that would become important factors in his later electroacoustic work.

Duet is a challenging, flashy, virtuosic piece, and the scale of technical demands in this work exceed anything in his previous writing for piano. Prior to *Month*, most of Perich's piano writing within a Minimalist aesthetic was not technically demanding. Pieces like *Silo* and *Translucent Null* do have technically challenging passages, but, generally speaking, those passages utilize techniques rooted in the Romantic technique tradition, not in the Minimalist tradition. Beyond his early period, Perich largely abandons this type of piano writing, and so the technical elements in these pieces are separate from his later work and have limited relevance to the rest of his keyboard writing through most of his career. In ensemble pieces from this early period, Perich often employs Minimalist piano techniques, but they are rarely especially challenging and usually serve an accompanying role. While *Pulse* is an important work, in that it is Perich's first listed solo piano composition, conceptual and harmonic ideas take precedence over other factors, resulting in a thoroughly non-technical piece²³³ that does not have much direct relevance to the keyboard technique employed in the broader

²³³ The only real technical challenges in *Pulse* relate to pedaling and sound control.

body of Perich's work. *Month* is firmly based in Minimalist piano techniques, but while more challenging than any of his other Minimalist keyboard writing up to that point, the scope of the work and the degree of difficulty pale in comparison to *Duet*.

Duet can be thought of as the work in which Perich begins to develop his own virtuosic keyboard language for the first time. While aspects of this language are closely related to traditional Minimalist keyboard techniques, Perich repurposes these practices to suit his own musical needs. Those traditional techniques arose to meet specific challenges in Minimalist music in the middle of the twentieth century, and, once developed, provided building blocks with which composers could thereafter write music for keyboards in a different way. The techniques bear the imprint of the conditions of their development: the tendency towards ensemble playing, the emphasis on rhythmic cohesion and close ensemble playing that developed in tight-knit groups like Steve Reich and Musicians and the Philip Glass Ensemble, the tendency for performances to take place in unconventional venues (often with amplification). Perich's keyboard technique is also shaped by broader circumstances, especially in relation to the increasing importance of electronic components in his music.²³⁴

²³⁴ Although at the time of *Duet's* composition, specifically, Perich's electronic practice was not yet fully integrated into his musical practice.

Constitutive elements of Perich's virtuosic keyboard writing include:

- 1) Extreme endurance, especially regarding repetition at high speeds.
- 2) Fast tempi, often at the edge of plausible playability.
- 3) Intricate ensemble relationships between the keyboard and other instrumental or electronic parts.
- 4) Absolute rigidity in tempo, including of very fast and/or complicated material.
- 5) Disorientingly sharp disjunctions between patterned material, often at high rates of speed.

Perich does not write exclusively for keyboard instruments in a virtuosic mode following *Duet*, but the elements as stated above are perceptible in his virtuosic keyboard writing across a wide array of works beginning with this piece. *Duet* establishes many of the technique characteristics that will evolve into hallmarks of Perich's keyboard writing.

The element of endurance is apparent from the very beginning of *Duet*. Player one begins the piece with constant figured material, which moves from (already speedy) sixteenth notes to (breakneck) thirty-second notes by measure seven (see figure 5). Player one does not have a rest of any kind from this demanding figured material until measure fifty one. As can be observed here and in other sections of *Duet* and other keyboard works subsequent to it, Perich pairs the traditional Minimalist compositional technique of repetitive figurations with keyboard material that is technically challenging and/or extremely fast. The combination of these two elements becomes a trademark

Figure 5. *Duet* (2002), measure 1-10.

characteristic in much of Perich’s keyboard writing and is a unique challenge to performers who undertake his keyboard works. Interestingly, it also often creates a timbre that has a similar quality to his later one-bit electronic music. In later works like *qsqsqsqsqqqqqqqq* and *Dual Synthesis*, close integration of keyboard material like that that opens *Duet* with one-bit electronics parts playing similar material in rhythmic unison is a central musical concept.

Physically speaking, this type of keyboard writing makes new technical demands on the performer. In contrast to some earlier forms of Minimalist keyboard technique, digitality is central to the physical manifestation of this mode of virtuosic keyboard writing in Perich’s music. By contrast, endurance-based repetition in the music of Steve Reich most often appears in the form of repeated or hocketing chord patterns, a

technique that is executed mainly using the larger muscles of the wrists and arms; the resulting endurance-based technical difficulty comes in the form of the exhaustion of those larger muscles and the difficulty of holding a fixed chord position in the hand over a long period of time. In the keyboard music of Philip Glass, digitality does often play a prominent role in the form of repetitive arpeggiations. However, these arpeggiations tend to take place in an extended hand position and to outline harmonic chords, reducing the textual importance of each individual note and allowing the wrist to assist the fingers in executing the repetitive motion. The keyboard writing at the opening of *Duet*, however, is an example of Perich's tendency to write highly repetitive, non-chordal music in tight configurations. This type of repetitive writing introduces a different kind of endurance challenge for the performer, as it requires a fixed hand position (in contrast to Glass's arpeggiations) and can only be executed by the small muscles of the individual fingers (not the larger muscles that can be relied on in Reich's chord-based repetitive music). This demands a highly virtuosic mastery of finger technique and introduces a type of endurance-based difficulty that differs from the forms of endurance more common in traditional Minimalist keyboard techniques. While *Duet* marks the first prominent appearance of this type of writing in Perich's work, it is also featured extensively in later works including *Dual Synthesis* and *Surface Image*. In its requirement of a tightly controlled hand position and strong emphasis on individuation between the fingers, it is reflective of both conventional harpsichord technique and the standard approach to typing on a standard qwerty computer keyboard.

Another characteristic of *Duet* that foreshadows an important element in Perich's keyboard writing going forward from 2002 is the high level of speed. In many cases, the

required speed is what makes Perich's keyboard parts difficult more so than the complexity or dexterity required by the notes themselves. For instance, the four-note figure that appears for the first time in measure seven (see figure 5) and remains an important motive throughout the opening section of the work is quite simple— two falling notes followed by two rising notes, all fitting comfortably in the hand. However, the extreme speed at which this simple figuration must be played over and over again— quarter note equals one-hundred-twenty beats per minute—transforms it into a virtuosic element. In much the same way that the simple alternation between two adjacent notes can become a categorically different technical challenge by increasing the rate of alternation to the speed of a trill, performers of Perich's keyboard works are often faced with the need to develop new technical approaches to perform fundamentally simple motives at extreme levels of speed.

In much of Perich's music, challenges in ensemble playing are centered on the difficulties of human performers playing in close rhythmic relationships with electronic components. Duet precedes Perich's use of electronic components in his music, and yet it also makes extreme demands in ensemble playing of the two performers. In any work, asking performers to play challenging material in perfect rhythmic unison is a virtuosic ensemble request. In Duet, this is a demand placed on the performers from the first moment that they are playing together (measure twenty-seven, see figure 6). From the outset, this work puts virtuosic demands on the individual performers while also

requiring them to maintain perfect rhythmic unison with each other—a demand for airtight ensemble unity.

The image shows a musical score for two players, P1 and P2, in measures 27 and 28. A box labeled 'C' is positioned above measure 27. Player 1 (P1) has a treble clef and a single note in measure 27, followed by a rest in measure 28. Player 2 (P2) has a treble clef and plays a continuous, dense pattern of sixteenth notes across both measures. The notation is complex, with many beamed notes and stems.

Figure 6. *Duet*, measure 27-28.

The performers are often in rhythmic unison throughout this work. This is made more challenging by the frequent use of overlapping rhythmic groupings/patterns of conflicting lengths between the parts, which make it more difficult for each player to retain a sense of certainty about maintaining rhythmic unity with the other performer. For instance, prior to measure 261, player one establishes a pattern that is very clearly dividing the four beats of the measure into four groups of four sixteenth notes. When player two enters in measure 261, they immediately juxtapose a new sixteenth note pattern that is fourteen notes long against this, disrupting the clear sense of four-four time and groupings of four sixteenth notes established by player one (see figure 7). The steeliness required to maintain absolute rhythmic accuracy in a repetitive part while ensemble rhythmic emphases shift under one's feet is an important component of much Minimalist music, broadly speaking. However, in works like *Duet*, Perich adds additional layers of difficulty to this traditional Minimalist ensemble playing technique by applying it to virtuosic material, in very exposed ways, and at very high speed.

4-note pattern
=====

258

P.1

261

P.1

P.2

=====

14-note pattern

Figure 7. *Duet*, measure 258-263.

It is remarkable that so many of the technical elements that become central to effectively integrating keyboard writing with his one-bit electronic music in later works are foreshadowed in *Duet*, fully two years before *1-Bit Music* was developed and four years before his first electroacoustic work for acoustic instruments and one-bit electronics (*For Argeo*). It is an indication, perhaps, that the aesthetic qualities of one-bit sound were already qualities that Perich was drawn to, even when working only with acoustic instruments. His approach to keyboard writing also highlights an interest in pushing human performers towards developing techniques that approximate the perfect rhythm and repetition at high speed of electronic systems, which is itself, perhaps, rooted in his conception of the piano as a quasi-digital entity and his broader interest in the aesthetics of physics and math.

Slowly Next to Her (2005)

Slowly Next to Her is the first electroacoustic work in Perich's catalogue. This is notable as it relates to his electronic album *1-Bit Music*, which was developed the previous year. Perich's earlier musical work is entirely acoustic, not incorporating electronic elements in any way prior to *1-Bit Music*. It was only after this successful foray into exclusively electronic music that Perich began to incorporate elements of electronics into works with acoustic instruments.

Slowly Next to Her is unique in Perich's output in its prominent use of sustained sine waves and also because it was composed specifically for a Yamaha Disklavier, as part of a Columbia University concert focusing on the instrument. The most common electronic component in Perich's work, by far, are the "noisy" lo-fi sounds that have become an audibly signature characteristic of his one-bit music. The simple hardware components used to create this one-bit music and the lo-fi quality of the sound they produce are rooted in Perich's initial experiments in incorporating electronics into his work, in which the stark limitations of working with such simple tools allowed him to feel a direct connection to the sounds produced and the need to work in tightly constrained parameters tapped into his affinity for Minimalist art. While aesthetically very different from the more "noisy" quality of the square wave-type sounds that are dominant in much of his music, sine waves are also one of the most basic forms of electronic sound. In this respect, *Slowly Next to Her* establishes a basis for Perich to work with simple electronic sounds in an electroacoustic setting, but does not establish the "noisier," square wave-based sound world that would come to be most closely associated with his

electroacoustic music as he developed his one-bit practice. At the same time, working with electronics via an instrument like the Disklavier sets this work apart in certain respects from the broader body of Perich's electroacoustic work, most of which has a strong focus on hardware that Perich programs and constructs himself. One of the purposes of maintaining control over the hardware and programming used in his electronic music is to avoid the complications of incorporating corporate-developed and -owned materials in his own creative process and output. He has indicated that concepts including "agency as consumers" and "the importance of building our own tools" are some of his foundational values that "make [him] who [he] is." In some respects, working with a Disklavier pushes against this goal, as Yamaha is obviously a large corporation and the Disklavier is a prefabricated instrument including preprogrammed sound production capabilities. On the other hand, this work precedes the development of his one-bit electroacoustic music practice, and Perich's decision to employ the Disklavier's electroacoustic capacities relates in important ways to the eventual one-bit electronic practice that Perich employs in most of his electroacoustic work.

While the quality of sound between the sine waves in *Slowly Next to Her* and most of Perich's other electroacoustic works with keyboard instruments is somewhat different, his close integration of the piano part and the electronics part is similar. Whereas the "noisier" electronic sounds of Perich's one-bit music lend themselves easily to fast tempi and detailed counterpoint, sine waves are especially well-suited to long tones. In *Slowly Next to Her*, Perich makes use of this propensity, interweaving the sine tones with the piano writing in a way that creates a sense of suspended sound that

is uniquely difficult to achieve on an instrument with the percussive action and inherent natural decay of an acoustic piano. In so doing, Perich creates the type of keyboard part that is rare in his overall output — one that is entirely unvirtuosic. In this way, *Slowly Next to Her* shares much with *Pulse*, another work in which the piano part is almost totally absent of what could be considered “technique.” In both works, this seems to be compelled by the prioritization of a strong conceptual element — in *Pulse* to create a template of a constant hypnotic pulse over which shifting harmonies can emerge and recede, and in *Slowly Next to Her* to create an integration between the acoustic and electronic components that accentuates the suspended quality of the long-tone sine waves.

Slowly Next to Her is one of the more extreme examples of a work in which Perich creates a Minimalist aesthetic that is based on rhythmic stasis and a sense of the suspension of time, as opposed to rhythmic propulsion and drive. In Minimalist music, piano and percussion parts are often used as a sort of rhythmic motor that creates the propulsive energy that underlines everything else in a piece,²³⁵ frequently juxtaposed with a very slow harmonic rhythm. The traces of this approach to piano writing are often present in Perich’s music and are one of the elements that makes his work audibly relatable to canonical works of Minimalist music. He often further intensifies the potential of this type of keyboard writing to create propulsive energy by stripping away other elements and bringing it to the foreground (as can be seen in works like *Month* and *Duet*). There are only a handful of works in which Perich utilizes keyboard instruments to create a more static kind of Minimalist environment wherein the sense of

²³⁵ This is especially key to many of Steve Reich’s ensemble works.

an underlying pulse is absent and rhythmic drive is not a central focus. Perhaps unsurprisingly, most of these pieces utilize keyboard instruments with the capacity to sustain long tones, unlike the acoustic piano or the harpsichord. This is perhaps most notable in *Elevation Maps* (2010), a work for five accordions and five-channel one-bit electronics. Over the course of this forty-nine minute work, a sense of pulse is almost totally absent. In a similar fashion to *Slowly Next to Her*, there is a focus on long tones and a tight integration between the acoustic and electronic instruments, to the extent that it can be difficult at times to identify one from the other. In contrast to *Slowly Next to Her*, the acoustic instruments in *Elevation Maps* are not inherently working against the aesthetic of sustained long tones. Whereas the tones of an acoustic piano once struck immediately begin a process of natural decay, accordions have the capacity to sustain pitches at a stable rate in a manner that is more similar to the capacity of electronic sound. While *I Am Not Without My Eyes Open*, a work for organ and string orchestra from 2005, does not include an electronic component, it also highlights Perich's interest in exploiting the capacity of sustaining tones for long durations when a keyboard instrument is capable of doing so. While that work does not create the overall sense of total suspension that is heard in *Slowly Next to Her* and *Elevation Maps*, the organ is used to sustain pitches for very long periods of time, sometimes in conjunction with the string orchestra and sometimes on its own.

Slowly Next to Her is noteworthy as the first electroacoustic work of any kind in Perich's catalogue. The fact that the first work in what would become a very important format for Perich as his career developed was written for piano should not be surprising. The piano plays a central role for Perich in its practical utility, its performative familiarity,

and as a philosophical terrain on which concepts of the digital and the acoustic seem to interplay in a productively creative way.²³⁶ On the other hand *Slowly Next to Her* is unusual as a work that utilizes the acoustic piano to do something that it is especially ill-suited for — to create a sense of sustained sound and a resulting feeling of the suspension of time. While Perich manages to achieve this tricky goal in this relatively short work, it is not entirely surprisingly that in future works in which he revisited this static aesthetic terrain, that he tended to do so with other instrumentations, and, when using keyboards, with those capable of sustaining pitch for long periods of time.

Five Architectures (2008)

Five Architectures is a piece for solo piano and three-part one-bit music and is listed as a “work in progress.” There is no score for this piece and the discussion of it here will be based on the recording of the work which is available in full on Perich’s website: www.tristanperich.com .

Perich has described this work as a “structured improvisation.” The concept of improvisation, clearly, can only truly apply to the piano part, as the one-bit electronics must be developed and programmed in advance. Therefore, the structure of the work could be conceived of as a fixed electronic component against which the pianist improvises freely. In this respect, the format of this work is reflective of a performance practice that Perich has employed in his career on two fronts: both as an improvisatory performer in general (with electronic and acoustic instruments) and, more specifically,

²³⁶ The specificity of the commission, for *Disklavier*, was also important, of course.

as an improvisatory performer playing alongside a previously worked out electronic component. This practice of improvising on an acoustic instrument in tandem with a fixed one-bit electronics part has been seen in Perich's performances alongside his one-bit albums,²³⁷ which obviously also function as stand-alone works. In the case of *Five Architectures*, the one-bit electronics are clearly more purposefully intended to engage with other elements, given their episodic nature, variable character, and occasional incidences of lengthy silence.

Thus far in examining Perich's relationship to the piano, his own keyboard playing in performance has only been mentioned in passing. George Grella, writing for *New York Classical Review*, had the following to say about an improvisation-based performance of Perich's at Roulette in Brooklyn in 2015: "His improvising was as thought-through, logical, and enjoyable as his composing, and Perich was also impressive at the keyboard. He is an agile pianist with a graceful touch."²³⁸

In considering this mode of performance and its seeming importance to Perich's work process and/or concept of his own work, it is interesting to refer back to Piekut's previously discussed "database model"²³⁹ concept of contemporary composers. It is clear that Perich has developed particular instrumental skills, technical configurations, and aesthetic foci that are uniquely and identifiably connected to his work. It is also clear that he is not fully invested in the more traditional fixed concepts of "*Werktreue*" or

²³⁷ Byrne, "Q+A: Composer Tristan Perich," *Vice*.

²³⁸ George Grella, "With Pianos and Circuits, Tristan Perich Creates a New Future for Music," *New York Classical Review*, December 4, 2015, <http://newyorkclassicalreview.com/2015/12/with-piano-and-circuits-tristan-perich-creates-a-new-future-for-music/>.

²³⁹ Piekut, "Post-War Music and Sound," 441.

“*Texttreue*”²⁴⁰ in regards to at least some of his own music, as is shown in his willingness to improvise along with otherwise stand-alone works and his embrace of improvisation in other capacities. In these ways, he certainly seems to have “bypass[ed] the waystation of the definitive score.”²⁴¹ One might also consider the flexibility of media and discipline across which he applies his one-bit electronic approach to be indicative of a practice that is centered more so around the development of identifiable personal artistic effects as opposed to the production of discrete and independent permanent works. However, one must also contemplate the importance of permanency in his work as well, certainly as displayed in the conventional printed scores that accompany the majority (although not all) of his musical works as well as the fixity of the electronic components in the majority of his work.²⁴² Additionally, his terminology of a “work in progress” also indicates a tendency to employ improvisation heavily in the development stage of a work, but to frequently remove elements of improvisation in the final score. This is reflected in the original version of *Dual Synthesis* versus its 2011 revision.

In *Five Architectures*, Perich employs a variety of keyboard techniques in his improvising that are also common in his conventionally notated works for piano. This is an indication that the development of the unique characteristics of Perich’s keyboard technique are either pianistic elements that come to him naturally or that he has integrated into his approach to the instrument as the style of his music developed over time. As noted by the critic above and as is apparent when listening to *Five*

²⁴⁰ Goehr, *Imaginary Museum of Musical Works*, 231.

²⁴¹ Piekut, “Post-War Music and Sound,” 441.

²⁴² Performances with Loud Objects, notwithstanding.

Architectures, Perich has a strong technical facility at the instrument, which likely relates to the high degree of virtuosity in much of his keyboard writing. Sam Wilson has theorized that: “the piano does not exist merely as a lifeless piece of technology (although this is a dimension of it), it also exists in habit, in the fingers of pianists whose bodily relationships with their instruments are mediated historically and inscribed into the instrument.”²⁴³ To extend this concept to a composer-pianist like Perich, it seems reasonable to also consider that a composer-pianist’s own physical relationship with the instrument often has some bearing on their writing for the instrument.²⁴⁴

While Perich might consider *Five Architectures* to be an unfinished work, it provides the observer with an important window into Perich’s compositional, improvisatory, and pianistic practices.

qsqsqsqsqqqqqqqq (2009)

qsqsqsqsqqqqqqqq is remarkable for a number of reasons. Firstly, this work for three toy pianos and three-channel one-bit tones marks the only use of toy piano in Perich’s catalogue. The centrality of the piano to Perich’s musical life has been discussed in various aspects of this dissertation, but it is clear that the importance accorded the piano bleeds over into the broader realm of keyboard instruments. When

²⁴³ Sam Wilson, “An Aesthetics of Past-Present Relations in the Experience of Late 20th- and Early 21st-Century Art Music,” (PhD diss., University of London, 2013), 211.

²⁴⁴ Haraway, “Cyborg Manifesto,” 153. This could perhaps be construed as another element of the cyborg in music—the interweaving of the agency of a composer-performer with the material specifications of their instrument, which over time co-evolve into specific modes of composition and performance.

Perich describes the physical interface of the piano as “a series of triggers” and the act of playing the piano as “a digital gesture,” he is primarily describing the keyboard’s relationship to the performer and less so the sound production specifics of the acoustic piano. (To quote Moseley again: “within the black box of the Steinway...the musical forge lay hidden behind the wallboard: as with the personal computer, only the interface of the keyboard provided sanctioned access to the instrument’s inner workings.”)²⁴⁵ This understanding of each key on the keyboard as executing a discrete binary function, and, crucially, the correlation between this structural relationship and the functionality of his one-bit electronic systems, is something that can extend across the broad keyboard family and is not specific to acoustic pianos. In this light, it is understandable that while the piano plays a central role throughout all phases of Perich’s musical career, other instruments from the keyboard family have also been featured in important works.²⁴⁶

The work is also accompanied by a remarkable prefatory note:

“qsqsqsqsqqqqqqqqq,” named after an excerpt of commands I type when configuring my drawing machine, is for a tightly synchronized canon of toy piano and electronic parts. Machines epitomize process, yet always is there a sensitive membrane between the electronic and the physical, the abstract and the real. It is to either side of this divide that we can skirt, loitering in the conceptual, dallying in the concrete. They call “muscle memory” what our bodies do without our minds intervening, fingers glittering above a keyboard. Machines can only dream of mistakes. There, where perfection turns imperfect and the imperfect gains perfection, is where our logic ends and the other begins.

²⁴⁵ Moseley, *Keys to Play*, 98.

²⁴⁶ *Dual Synthesis* (harpsichord), *Elevation Maps* (accordion), *I Am Not Without My Eyes Open* (organ).

This commentary is exceptional in a variety of ways. In explaining the derivation of the title, Perich underscores the twin importances of the parallel processes he uses to compose his electroacoustic chamber music: conventional musical composition for acoustic instruments and programming for his one-bit electronics. The title of this piece and this explanatory note are printed in the physical embodiment of Perich's most conventional musical practice: a standard notation musical score. There is nothing in this score that directly compels the one-bit music into existence. As opposed to the written notes for the human performers, which communicate detailed musical information in a specific and widely understood formal language, the one-bit sound circuits do not respond to written music in any way. Rather, the written one-bit parts in the musical score are a translated reflection of the promised result of a separate creative process.²⁴⁷ For the one-bit electronic circuits, code is the formal language through which Perich conveys his musical ideas in a way that can be brought to life when "read" by the microprocessors. By using a coding command as the title of this work, he is bringing these two parallel systems together and inserting a trace of the microprocessors' "score" into the conventional musical score of the human performers. This is a compelling choice that highlights the importance of the integration of these two very different systems of operation in Perich's creative process, and, perhaps, an invitation to performers of the work to engage at a deeper level of understanding with the electronic components of the work, not only the conventionally written score.

²⁴⁷ And, clearly, they function as a useful reference tool for the human performers. Having a full written score to refer to is extremely handy, especially considering the limited capabilities for altering the playback of Perich's one-bit electronic sound circuits for rehearsal purposes.

In this program note, Perich also poetically describes some of the central concepts that motivate so much of his work. The “sensitive membrane between the electronic and the physical” could also function wonderfully as a description of the layer of specialized technique that keyboard players often have to grapple with to effectively perform his electroacoustic music. Finding a way to convincingly perform in the grey area between machine perfection and human corporeality is the overriding challenge that is present in so much of Perich’s music. While performers must maneuver these challenges, however, Perich also highlights here his interest in imperfection and the specialness that the capacity to make mistakes lends to human performance and, more broadly, the natural world. This interest in perfect abstract systems being degraded by their implementation in the physical world is a central aspect of Perich’s *Machine Drawings*, which is also directly mentioned in this program note. “Where our logic ends and the other begins” can be thought of as the point in a *Machine Drawing* in which the ink of the pen starts to run out but the motor keeps executing the one-bit drawing program. It could equally be considered the point at which a pianist’s physical ability to play an extremely challenging passage in Perich’s music meets the limit of conventional technique and an accommodation or unconventional technique must be applied. In this program note, Perich confronts what Katherine Hayles describes as the “limit to how seamlessly humans can be articulated with intelligent machines, which remain distinctively different from humans in their embodiments.”²⁴⁸ Rather than decrying this tension, he celebrates its in-betweenness. Few of Perich’s electroacoustic works have a tighter aesthetic cohesion between the one-bit electronics parts and the acoustic parts

²⁴⁸ Hayles, *How We Became Posthuman*, 284.

than *qsqsqsqsqqqqqqqqq*. It is fitting that this thoughtful program note that touches so eloquently on the centrality of this important relationship between the electronic and the natural world in Perich's work overall accompanies this work in particular.

There are also specific points of relation between the concepts presented in this program note and the content of *qsqsqsqsqqqqqqqqq*. Throughout most of the piece, all parts move together at the rate of the sixteenth note. The exceptions to this unified rhythmic motion are of two varieties. The first being material like that seen in measure one. In measure one, all six parts are playing generally ascending figures using the same pitch set of D-flat, G-flat, A-flat, and B-flat across all parts. Rhythmically, however, the six parts disorientingly stack sixteenth notes against triplets, against quintuplets, and other rhythmic variety. The total impact of this rhythmic complexity across relatively simple and similar melodic motion is a sound of imperfection — of “not playing together.” Immediately following measure one, all six parts snap into perfect sixteenth note unison (see figure 8). This pattern of alternation between the audibly “perfect” constant sixteenth notes and the rhythmically jumbled “not playing together” material continues throughout the opening section.

♩ = 105 qsqsqsqsqqqqqqqq TRISTAN PERICH

The image shows a musical score for six parts: Toy Piano 1, Toy Piano 2, Toy Piano 3, 1-Bit Tones 1, 1-Bit Tones 2, and 1-Bit Tones 3. The score covers measures 1-3. Toy Piano 1 has a box 'A' above the first measure and a 'ff' dynamic marking. Fingerings (5, 3, 2) and accents are present. The 1-Bit Tones parts have a '3' above the first measure. The tempo is marked as ♩ = 105. The key signature is three flats and the time signature is 4/4. The notation includes sixteenth notes, triplets, and accents.

Figure 8, *qsqsqsqsqqqqqqqq* (2009), measure 1-3.

The second type of exception to the constant sixteenth note motion is the periodic bursts of thirty-second note ornament-like material, such as in measure sixteen. What is notable about these moments in the piece is that whereas the six parts generally shift in unison whenever there is a change in texture, harmony or rhythm throughout the piece, at the end of each thirty-second note outburst in measure sixteen, each part ends its figure independently (see figure 9).²⁴⁹ Once again, this slight disjuncture between the six parts executing bright ornamental thirty-second note figurations results in a calculated sound of imperfection. In these subtle ways, Perich is

²⁴⁹ In measure eighteen, we see the inversion of this in which the six parts enter in a disjointed fashion before regaining unified sixteenth notes. Whether disjuncture comes at the beginning or the end of the gesture, the impact of this juxtaposition results in a similar aesthetic effect.

notating “where perfection turns imperfect” and even facilitating a way for the one-bit electronics to do more than only “dream of mistakes.” By juxtaposing an overriding constancy of sixteenth note rhythmic unison with moments of destabilizing rhythmic disjunction and seeming disarray, he is troubling the otherwise perfect system of rhythmic cohesion and the tight integration of acoustic and electronic that is central to the piece. This is a good example of the Glitch aesthetic at play in Perich’s work.



Figure 9. *qsqsqsqsqqqqqqqq*, measure 16-18.

There are few pieces in Perich's catalogue in which the sonic integration of the one-bit electronics and the acoustic instruments are as seamless as in this work. Interestingly, in his first electroacoustic works including acoustic instruments and one-bit electronics, he often favored instrumentations and compositional approaches in which differences in timbre between the electronic and acoustic elements of the work were emphasized.²⁵⁰ While the sonic integration of the one-bit electronics and the toy pianos in *qsqsqsqsqqqqqqqq* is intense, it can be thought of in relation to two other works from around the same period of time. Both *A/B/C/D* (2008) and *Observations* (2008) exhibit a similar intensity of integration between the acoustic parts and the one-bit electronics parts. It is possible that the instrumentation of these three works (*A/B/C/D*, solo piccolo; *Observations*, crotales; *qsqsqsqsqqqqqqqq*, three toy pianos) had an impact on this developing technique of tight sonic integration. All three of these high-pitched, relatively thinly-timbred instruments blend exceedingly easily with the higher range of Perich's one-bit electronics sound. The development of this technique of tight sonic integration is one that would continue to play a part in Perich's electroacoustic music going forward.

Setting aside the improvisational *Five Architectures*, *qsqsqsqsqqqqqqqq* is the first work in which Perich incorporates his approach to virtuosic keyboard writing in an electroacoustic work with one-bit electronics. Key aspects of this approach are present throughout the work, including quick tempi (a technical challenge further complicated by the often irregular action of the typical toy piano), a need for endurance through long periods of unyielding rhythmic material, intricate ensemble relationships between the

²⁵⁰ His first work for one-bit electronics and an acoustic instrument, *For Argeo* for baritone saxophone and two-channel one bit music, is a clear example of this model.

various parts (which are often in canon with each other), and abrupt disjunctions of patterns that require sudden and disorienting physical adjustments. The tight ensemble relationships between keyboard parts in a driving rhythmic work at high speed hearkens back to elements of *Duet*, but in this context is further complicated by the equal division of the six parts between human performers and one-bit electronic parts. It is remarkable how well-suited many of the pianistic approaches that Perich employed in early works like *Duet* were for his eventual work in electroacoustic music involving one-bit electronics. This indicates that the broader aesthetic principles behind these musical ideas were pre-existing interests, perhaps influenced by his early exposure to Minimalist music and art, and were simply expressed via the mechanisms of acoustic instruments and electronics at the times when he took up those differing artistic tools.

In the program note to *qsqsqsqsqqqqqqqq*, the phrase “fingers glittering above a keyboard” can be interpreted in two ways — either as the pianist’s fingers glittering above the keyboard of their instrument or as the programmer’s fingers glittering above the keyboard of their computer. Roger Moseley has explored at length the duality of the keyboard as both technological and musical interface through history: “The play of numbers, notes, fingers, and keys thus invites us to contemplate music and technology less as distinct categories and more in terms of how technologies can be understood as always already musical, and vice versa.”²⁵¹ This simple dual meaning captures so much of what is at the center of Perich’s artistic practice and vision of himself as existing in between the human and the machine, affiliated with communities and artistic practices both in the fields of creative music and art and the tech world. While

²⁵¹ Moseley, *Keys to Play*, 4.

qsqsqsqsqqqqqqqqqq is an exciting piece, and is one of Perich's works that is most often performed, it is also a meditation on the integration of electronic and musical elements that only become more important in Perich's work from this point on.

Dual Synthesis (2009)²⁵²

Dual Synthesis is a twenty-three minute work for harpsichord and four-channel one-bit electronics. It is Perich's only work for harpsichord and also holds a place as one of the most substantial of his works for any keyboard instrument. The scale of *Dual Synthesis* transcends any other keyboard work up to this point in Perich's career, both in terms of duration and virtuosity. In doing so, it primarily expands and heightens existing virtuosic elements that are present in earlier works of his as opposed to implementing any completely new types of keyboard technique. *Dual Synthesis* is an outwardly virtuosic piece that features a solo performer and was written for a keyboard instrument, the instrument class with which Perich is most comfortable as a performer. This made it an excellent vehicle for Perich to champion his electroacoustic one-bit music, which, at the point of *Dual Synthesis's* completion, he had only been creating for three years. In the year of its composition, Perich went on a national tour performing *Dual Synthesis*, traveling the country with a harpsichord and his one-bit electronics

²⁵² It should be noted that while *Dual Synthesis* was composed in 2009 and performed extensively in that time period by Perich, it was revised in 2011 with the new revision being premiered by Daniel Walden that year. The recording and score released for Physical Editions in 2015, as well as the full written score used by performers today are based on the 2011 version of the work. Perich has described Walden's role in the revision of the work as an important one, especially as it relates to the ultimately extreme level of virtuosity that exists in the final version of the work.

gear. This tour culminated in a performance at Galapagos Art Space in Brooklyn, one of the most prominent New Music Community-affiliated venues at the time.

In its quick tempo marking and prominent use of long stretches of constant thirty-second notes, *Dual Synthesis* hearkens back to an earlier, prominently virtuosic work, *Duet*. *Dual Synthesis* begins immediately with a repetitive pattern in constant thirty-second notes (see figure 10). Given that the tempo marking is quarter note equals one hundred beats per minute, this means that the performer plays thirteen notes every second. This is truly a remarkable rate of speed to sustain, and is at the outer edge of plausible playability. In *Duet*, sustained thirty-second note passages, while difficult, only appear in the first section of the piece, are shared between the two pianists, and are sometimes in a texture that includes other, non-thirty-second note material. All of these qualities lighten the inherent difficulty of the technique to some extent. In *Dual Synthesis*, the thirty-second note is literally the only note value used in the entire work, and there are rarely any accommodating factors that lessen the difficulty or prominence of this material. To the contrary, a number of factors including tight ensemble relationships with the other contrapuntal parts, the rigidity of the electronics parts, and the eventual insertion of interruptive thirty-second rests, further complicate the execution of this technique. While the tempo marking in *Duet* is slightly faster than in *Dual Synthesis*,²⁵³ the unyielding use of thirty-second notes throughout *Dual Synthesis* takes this virtuosic skill to another level of difficulty.

²⁵³ *Duet*: quarter note equals 120 beats per minute; *Dual Synthesis*: quarter note equals 100 beats per minute.

The image displays a musical score for five instruments: Harpsichord, r-Bit Electronics 1, r-Bit Electronics 2, r-Bit Electronics 3, and r-Bit Electronics 4. The score is written in 4/4 time with a tempo marking of quarter note = 100. Each staff contains a continuous, rapid stream of thirty-second notes, creating a dense, virtuosic texture. The key signature is three flats (B-flat, E-flat, A-flat).

Figure 10. *Dual Synthesis* (2009), measure 1-2.

Another component that makes virtuosic keyboard technique central to *Dual Synthesis* is the extreme endurance required of the performer. While the aspect of endurance has been discussed previously as a primary component of traditional Minimalist piano technique that Perich pushes further through extreme tempo or difficulty of material, in *Dual Synthesis* Perich really takes the concept of endurance to the limit. The performer in *Dual Synthesis* begins playing in the first measure and does not have a rest of any kind until the 159th measure of the piece. This would be a long distance to go without a meaningful rest in any circumstance, but the fact that throughout this period the performer is playing a constant stream of thirty-second notes at a rapid tempo makes this an extraordinary physical challenge to perform. Far from being unusual, these very long stretches without rests are common throughout *Dual Synthesis*, including a particularly grueling passage beginning in measure 437 that extends to the end of the piece (see figure 11). These sections requiring extreme endurance also take place within a piece that is substantially longer than any of Perich's

previous keyboard works. While an early work like *Month* might have few meaningful periods of rest over the course of the entire work, it is also only five minutes long. In *Dual Synthesis* multiple sections requiring extreme endurance are spread over the full twenty-three minutes of the work. For the performer, this means developing a strategy of virtuosic endurance at both the local and global levels to make it possible to perform this work.

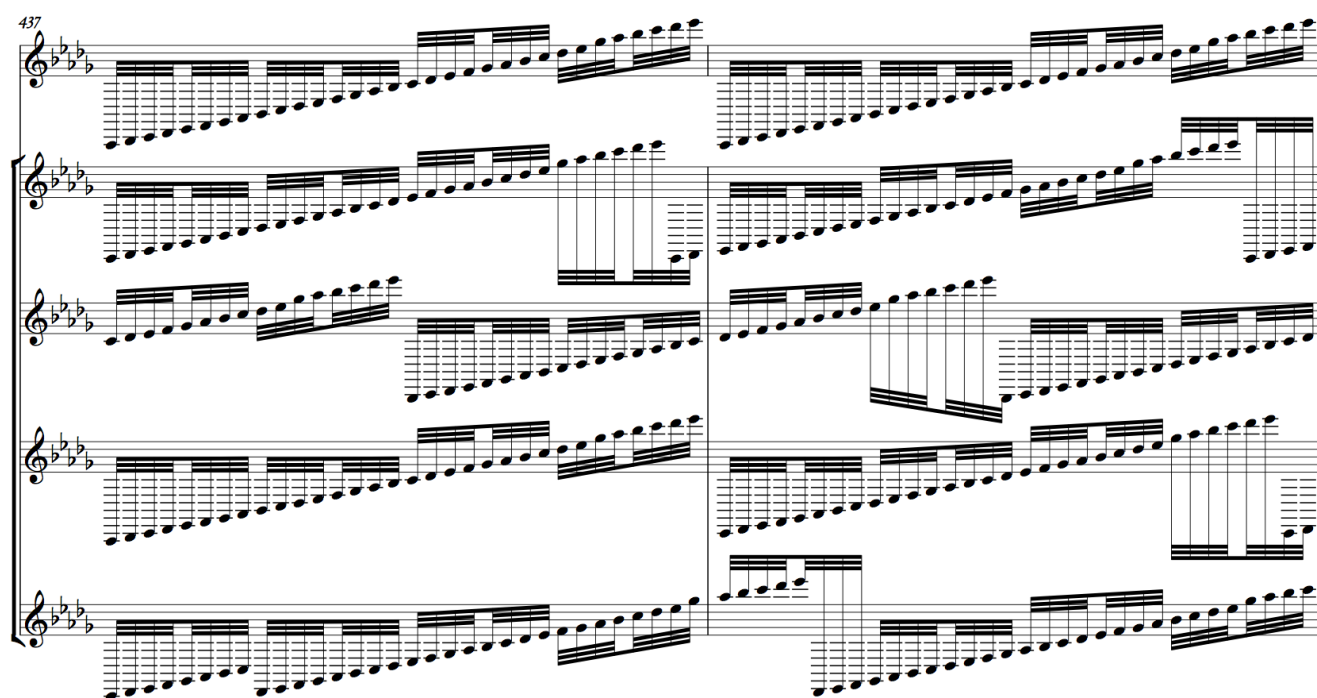


Figure 11. *Dual Synthesis*, measure 437-438.

Dual Synthesis builds upon ensemble relationships that were developed in *qsqsqsqsqqqqqqqq*, which was written in the same year. In both works, the electronic and acoustic parts are in constant close relation to each other— generally moving at the same rate of rhythm and utilizing the same melodic material, often in canon. The

fundamental result of this approach (especially given the timbre of the harpsichord and toy pianos in relation to the timbre of Perich's one-bit electronics) is the creation of a unified sonic aesthetic, in which it is often difficult to distinguish the contrapuntal parts from each other or the electronic parts from the acoustic parts. There are two important differences between how this approach is applied in these two works, however.

Everything happens at a much faster pace in *Dual Synthesis* due to the fact that its fundamental rhythmic unit is the thirty-second note, whereas the fundamental rhythmic unit in *qsqsqsqsqqqqqqqq* is the sixteenth note. Additionally, while there is an equal distribution of parts between electronic and acoustic "performers" in *qsqsqsqsqqqqqqqq*, the single human performer in *Dual Synthesis* is heavily outnumbered by the four one-bit electronic parts. This stacked balance in favor of the electronic parts further compels the performer to fit into the absolutely rigid nature of the one-bit electronics' rhythmic execution. It also makes it more difficult to independently hear discrete voices of counterpoint, as the timbre of each speaker-cone instrument is essentially identical (as opposed to the inherent variability between acoustic instruments, like toy pianos). In *Dual Synthesis*, the individual parts are often in canon, leading to disorienting rhythmic and spatial effects. Playing accurately in canon at such an extreme tempo demands a fantastically precise rhythmic capability of the performer, even more so because the other contrapuntal parts are not performed by human performers who can make the slight accommodations and adjustments to stay together that are common practice in the traditional performance of chamber music.

The rigidity of time that is an inherent component of Perich's one-bit electronic music presents a real challenge for performers of *Dual Synthesis*. This is a

characteristic of all of Perich's electroacoustic work, but is especially challenging here due to the extremity of the required endurance and speed. There are also musical components specific to *Dual Synthesis* that make the prospect of performing chamber music with non-human partners remarkably difficult. The first of these musical components is the tight canonic relationships between the single acoustic and four one-bit electronic parts. In any musical situation, maintaining a canonic relationship with another performer can be a profoundly disorienting experience. By layering these canonic relationships on top of each other in rhythmic unison (as is also done in other works like *qsqsqsqsqqqqqqqq*), this sense of disorientation is heightened. This dense canonic texture is the basic foundation of *Dual Synthesis*. Against this backdrop, a secondary level of ensemble complexity is periodically juxtaposed, employing another common characteristic of Perich's approach to keyboard virtuosity: sharp disjunctions between patterned material. This is a prominent component in *Dual Synthesis* that has important aesthetic implications but also presents challenges for the performer.

Given that the rapid, tight canons that are established from the beginning of *Dual Synthesis* are so intricately coordinated and occur at such an extreme speed, the overall impact is almost of a wall of sound. Starting with the introduction of scattered thirty-second rests in measure 159, tiny notches in this solid wall begin to appear (see figure 12). These tiny holes in the texture sound almost like audio glitches in an otherwise seamless sonic tapestry.

Rests used
as "glitch"

=====

Figure 12. *Dual Synthesis*, measure 159-160.

As the rests become more prominent, maintaining the canonic relationships between the parts becomes increasingly complex, and the challenge on the performer to adhere to total rhythmic stability in this intricate web of entrances and rests is searingly difficult (see figure 13).

Greater saturation of rests

Figure 13. *Dual Synthesis*, measure 197-198.

A similar Glitch aesthetic is achieved by treating patterned material in a granular fashion, breaking it up into new assemblages of the source pattern material in unexpected ways. This audible troubling of a seemingly perfect system is another manifestation of Perich's machines "dream[ing] of mistakes" and has been previously discussed in the context of the rhythmic disjunctions in *qsqsqsqsqqqqqqqq* and the impact of physical world interplay on the perfectly programmed machines in Perich's *Machine Drawings*. In *Dual Synthesis*, as in *qsqsqsqsqqqqqqqq*, we hear how this interest in embracing imperfection in supposedly perfect systems is a manifestation of a Glitch aesthetic. In popular music embodiments of Glitch, the failure of audio technology such as skipping CDs and circuit-bent consumer electronics serve as a creative outlet and has developed into a desirable audio aesthetic, while simultaneously reasserting human agency in a neoliberal society that is overwhelmed with quotidian digital technologies. Similarly, in *Dual Synthesis* Perich playfully inserts irregularity into an instrumentation and compositional approach that could have easily resulted in a perfect sonic monolith. In so doing, he tips the scales slightly towards the harpsichordist, who is outnumbered by his speaker cone instrument "quintet partners" and under extreme duress to develop effective keyboard techniques that can keep up with them, but for whom the slight irregularities in the "glitches" in this piece create a less glaring version of perfection to fit into.

In a review of a performance of *Dual Synthesis* written for the *New Yorker* in 2012, Alex Ross described the timbre of Perich's one-bit electronic music as "raw,

buzzing sonorities harking back to the early days of synthesized sound”²⁵⁴ and then describes the performance of *Dual Synthesis*, specifically, as follows: “The antique machines of different ages came together in a hurtling form, savage and beautiful and strange.”

To the extent that the harpsichord has been discussed specifically in this study up to this point, it has been in regards to its timbre and that timbre’s relationship to Perich’s one-bit electronics. Ross proposes another perspective from which to consider this work, and, specifically, its instrumentation. Perich has spoken of the importance that using simple electronic systems has had to his work, and avoiding more complicated, but more contemporary software and hardware systems. He has also spoken about “being attracted to [the] sound aesthetic”²⁵⁵ that utilizing these simple components to create electronic music results in: “It’s really raw. It’s really minimal. And it’s really digital. It’s also noisy.”²⁵⁶

In other words, Perich is drawn to the gritty sounds of an older technology. One could transpose this line of thinking to the common perception of the harpsichord as an older instrument strongly affiliated with a sound world that inherently brings up connotations of the past. The harpsichord also has greater limitations across a number of parameters (most notably with regards to dynamic range) than the modern piano, which is also reflective of the enhanced structural limitations that Perich willingly takes

²⁵⁴ Alex Ross, “Joyful Noise: Michael Tilson Thomas’s ‘American Mavericks’ Festival,” *New Yorker*, April 16, 2012, <https://www.newyorker.com/magazine/2012/04/16/joyful-noise> .

²⁵⁵ Bang on a Can Store (website), “Tristan Perich on *1-Bit Music*.”

²⁵⁶ Bang on a Can Store (website), “Tristan Perich on *1-Bit Music*.”

on in his decision to work with simple microchips rather than more complicated, more corporately-mediated electronic systems. In *Dual Synthesis*, then, Perich is repurposing two old forms of technology and using them to create music that feels surprisingly relevant in our contemporary digital world.

Elevation Maps (2010)

Elevation Maps is unique in the context of Perich's music for keyboard instruments in a number of ways. Written for five accordions and five channels of one-bit electronics, it is the only work in which Perich utilizes the accordion. While Perich did not perform the piece at its premiere,²⁵⁷ he has performed it subsequently. This is yet another indication of the multifaceted nature of Perich's role in his musical work, in which, aside from composing, he has often been performer, improviser, and tech laborer as well. It also highlights Perich's comfort with engaging with instruments with a keyboard interface, including but also going beyond the acoustic piano. Many keyboard performers have had the concept of specialization at their specific instrument ingrained in them as a part of their keyboard training and are loath to perform on a keyboard instrument other than their primary instrument. At the same time, many composers have similarly been encouraged over the course of their education to avoid fostering performance skills and to focus on their compositional work instead. Perich seems to exist happily without this baggage, transitioning easily through musical roles and from instrument to instrument, depending on the circumstance. In this, he is

²⁵⁷ The performers at the premiere at the Noguchi Museum in New York on September 10, 2010 were Jim Altieri, Matt van Brink, Benjamin Ickies, Franz Nicolay, and Kamala Sankaram.

reflective of the cultural norms of the New Music Community that has had a substantial influence on composers of his generation and its general disinterest in rigid categorizations of musicians.²⁵⁸

What are not present in *Elevation Maps* are elements of Perich's approach to virtuosic keyboard techniques that have been discussed at length in relation to some of his other works. *Elevation Maps* is a work that is almost entirely devoid of keyboard technique. The lengthy piece centers on long sustained tones in both the accordion and one-bit electronics parts that progress and interact at a glacial pace over the course of nearly an hour. In the context of his keyboard work, this avoidance of a technical approach to the keyboard to serve a conceptual aesthetic of stasis hearkens back to early works like *Pulse* and *Slowly Next to Her*, whereas the bulk of Perich's keyboard music once he started incorporating one-bit electronics into his music in 2006 is often characterized by a more virtuosic approach to the instrument and the evolution of a unique approach to virtuosic keyboard technique. However, this sort of engrossing, static sonic environment can also be observed in other works of varying instrumentation that are more proximate in date of composition to *Elevation Maps*, most prominently *Impermanent* (2010) for tubular bells (two percussionists) and two-channel one-bit electronics.²⁵⁹

²⁵⁸ A good example of this renaissance mentality is the hybrid career of Caroline Shaw; while a celebrated, Pulitzer prize-winning composer, she also sings in Roomful of Teeth and continues to perform as a violinist.

²⁵⁹ While the one-bit electronics usage in *Impermanent* is rather different and not focused on sustained tones relative to *Elevation Maps*, the overall quality of suspended time is similar between the two works.

While the technical approach that Perich takes in *Elevation Maps* differs radically from the approach taken in *qsqsqsqsqqqqqqqq* and *Dual Synthesis*, something that these works have in common is an interest in creating a unified sonic texture between the electronics parts and the acoustic parts. In the two earlier works, this is achieved through tight and densely layered canonic material moving rapidly. In *Elevation Maps*, by contrast, this unified aesthetic happens in a generally thin texture of isolated tones of very similar timbre. Various approaches to integrating the sounds of acoustic instruments and one-bit electronics in Perich's music have been discussed across various instrumentations,²⁶⁰ but in truth, the accordion is likely the acoustic instrument that can most directly match the timbre of the simple lo-fi electronic sound that is so characteristic of Perich's one-bit music. This capacity to effectively match the pitch and timbre of the one-bit music components of the work allows Perich to create a very unified sonic palette between acoustic and electronic elements without building a busy, dense macrotecture as he has successfully done in works like *qsqsqsqsqqqqqqqq*. In certain respects, this can be viewed as a solution to the "problem" that exists in *Slowly Next to Her*, in which the inherent natural decay of the piano is always working against the sine waves' long, sustained tones. With accordion, Perich does not have to execute an intricate dance to create the illusion of integrated electroacoustic suspension of sound— the accordion is well suited to sustain a long tone and easily coordinates with the long sustained tones in the one-bit electronics. Neither does he need to create a dense wall of busy counterpoint to create an effect of timbral uniformity, as he has done previously with instruments of a percussive action whose tones naturally decay. In

²⁶⁰ Including works with non-keyboard instrumentation, like *A/B/C/D* and *Observations*, which also have a strong focus on creating a tightly integrated overall electroacoustic blended timbre.

Elevation Maps the relative ease of creating this sense of suspended time through slowly shifting sustained tones in both the accordion and electronics parts also makes it conceivable to have a work of this relatively long duration and might explain why Perich's earlier works for keyboard instrument in this vein (both for piano) were relatively short.

Woven (2010)

Woven is a work for ensemble (clarinet, violin, cello, percussion, piano) with sequenced amplification. *Woven* is one of two works in Perich's catalogue (alongside *Sequential*, for percussion and string quartet) in which the electronic element of the work is applied to the amplification system rather than to the direct production of electronic sound. These works are manifestations of Perich's process-oriented approach to his work. His incorporation of one-bit electronic processes in his visual work entails differing applications for specific projects, such as *Machine Drawings* and *1-Bit Video* installations. Similarly, one-bit technology can be applied in more than one way in his musical work, including to control amplification as is seen in *Woven*.

To achieve this effect, each individual instrument is amplified. Each channel of sound is then filtered through an electronic system that activates or deactivates the individual microphones (functioning as a binary gate) for each instrument. This system of amplification activation and deactivation is controlled by much the same technology that is used in Perich's one-bit music works in which programming is used with simple hardware to activate or deactivate electronic sound. In much the same manner as with

those works, Perich uses these relatively simple components executing binary on/off relationships to create a surprisingly rich and engaging sonic experience. Interestingly, while the only sound produced in a performance of *Woven* is that made by acoustic instruments, the precisely controlled activation and deactivation of each instrument's microphone renders a quality not unlike that of some electronic music production, in which samples are assembled into musical structures that are determined at the technological level to create a work of music.

However, there are important differences between Perich's sequenced amplification process and conventional electronic music. While the concept of the sequenced amplification in *Woven* as a real-time sampler resonates in some respects, it leaves out important qualities inherent to this work. A traditional understanding of a sample is that sound is created and captured once and then used repeatedly in conjunction with other sampled sounds. In the case of *Woven*, however, no sound is captured and stored. Instead, sound is either passed on through an amplification system or not in real time. The pre-programmed structure of what is amplified when has been determined in advance and the ensemble performs with a visual click track that ensures accurate coordination with the sequenced amplification.²⁶¹ The sequenced amplification system is clearly a central component of the work, but is also part of a network and is incomplete on its own. Without live performers executing their parts, the piece does not exist; their performance is not captured and retained for future use and the programming of the amplification system never develops the power to produce

²⁶¹ The use of a visual click track has become a common tool in Perich's music, and is generally included with the audio technical equipment for a given work and run via the same system as the one-bit music to ensure synchronicity.

sound independently or rebroadcast captured sound. In this way, Perich is again integrating electronic and human modes of production and intertwining their processes to create a hybrid practice.

Through the use of this system of sequenced amplification, Perich creates a unique acoustic environment. The only sound-generating mechanisms in the work are the acoustic instruments, but the sound that is produced by these acoustic instruments serves two sonic functions. Firstly, the acoustic, unamplified sound of the ensemble exists in the performance space by virtue of it being produced by the instrumentalists. These are acoustic instruments and are not dependent on an electronic sound source or amplification system to generate sound. Secondly, each instrument is individually amplified (or not) in an intricately programmed sequence specific to their individual part and controlled by the pre-programmed microchips. This creates a terraced relationship between the sound of the unamplified ensemble and the sound of each instrument when amplified. Because of the intricate nature of the sequenced amplification, this creates layers of audience reception. The effect is spatial, yet static; perceptible, but difficult to tease out. The delicately complex activation and deactivation of each microphone over the course of the work leads the secondary layer of amplified sound to attain a seemingly tangible presence in the space, even though its only point of activation is the house amplification system and is not the result of actual creative sound generation. There is a ghostly second layer of the performance that exists exclusively through the mechanism of the sequenced amplification.

Philip Auslander has written extensively on the concept of “liveness” in performance. In “Digital Liveness: A Historico-Philosophical Perspective,” he considers

the development of digital technologies on the experience of liveness and determines that “digital liveness emerges as a specific relation between self and other, a particular way of ‘being involved with something.’ The experience of liveness results from our conscious act of grasping virtual entities as live in response to the claims they make on us.”²⁶² This is a compelling concept when considered in the context of *Woven*. When the technological apparatus is all but ephemeral and the work exists in an imbricated state of embodiment and non-embodiment, is it possible to tease out or locate the liveness (or livenesses?) in the binarily mediated live performance of this work? This application of technology to the amplification of acoustic performance exists in only two works of Perich’s output, *Woven* and *Sequential*, and is also unusual in the broader realm of electroacoustic chamber music in general.

To most effectively interact with the sequenced amplification system, large portions of the piano part consist of repeated notes. Because of the nature of the piano, in which natural decay of a sustained pitch begins immediately following its attack, it is not possible to truly sustain a dynamic level consistently in between attacks as it is possible to do with a wind or string instrument. By using fast repeated notes in the piano part, Perich provides a more consistent palette from which the sequenced amplification can weave in and out of, sure to capture a recently attacked note at full sound.

Repeated notes in general are a notoriously exhausting keyboard technique, which most pianists alternate between hands or fingers to reduce physical exhaustion and to

²⁶² Philip Auslander, “Digital Liveness: A Historico-Philosophical Perspective,” *PAJ: A Journal of Performance and Art* 34, no. 3 (September 2012), 10.

more effectively engage with the piano's double escapement action. In *Woven*, the piano writing follows the pattern established in numerous other keyboard works in which Perich increases the difficulty level of an existing keyboard technique, rendering it into a more specific and characteristic approach to the keyboard. In the case of the repeated notes in *Woven*, the combination of a relatively fast tempo (sixteenth notes at quarter note equals 140 beats per minute) and especially the need for endurance to maintain consistent repeated notes over very long durations compel the performer to push their technique to the extreme. Most pertinently, from measure 229 to measure 421 the pianist plays a constantly repeated B-flat in unison with the vibraphone (see figure 14). This type of writing is uniquely well-suited for the sequenced amplification system that is used in this work, but also presents an extreme endurance challenge for the performer.

Individual notes of the tremolo are not indicated. The tied whole notes indicate the duration of the tremolo itself, which occurs at the rate of the sixteenth note (in unison with the vibraphone part).

229 **B** 230 231 232 233 234 235 236 237 238

239 240 241 242 243 244 245 246 247 248

Figure 14. *Woven* (2010), measure 229-248.

Surface Image (2013)

Surface Image is Perich's most ambitious work for solo keyboard instrument. Written for pianist Vicky Chow, it was premiered at Roulette in Brooklyn in 2013, and has subsequently been performed extensively by Chow in the United States and abroad. In this work of just over an hour for solo piano and forty-channel one-bit electronics, Perich applies and expands on important characteristics of his electroacoustic musical practice and does so on an epic scale. He also explores new techniques and modes of composition in a work that bridges familiar aspects of his broader catalogue with characteristics that are less common. The only other work of Perich's that might be compared in sheer scale to *Surface Image* is *Drift Multiply* (2018), a recent work for fifty violins and fifty channels of one-bit electronics. (*Drift Multiply* also lasts for approximately one hour.) Both works have a symphonic quality about them, which is in part a function of the large number of individual parts, but also due to the episodic and varied nature that Perich applies over their relatively long durations. Something that is unique about *Surface Image* is its extreme ratio of one-bit channels of sound to acoustic instruments. In *Drift Multiply*, while there is a large number of voices (one hundred), they are equally divided between acoustic violins and one-bit electronic channels. In *Surface Image*, there is a single acoustic instrument juxtaposed against a chorus of forty one-bit channels of sound. This is a fundamentally different setting, and, at this scale, is unique in Perich's catalogue.

Vicky Chow is the pianist in the Bang on a Can All-Stars. Her affiliation with a group that is so important to the New Music Community essentially guaranteed that she

would cross paths with Perich. As has been previously discussed, Perich attended the Bang on a Can Summer Festival and his *1-Bit Music* and *1-Bit Symphony* albums were released on Bang on a Can's Cantaloupe Label. He was also commissioned to write a piece for the Bang on a Can All-Stars through their People's Commissioning Fund program in 2008. While Perich had connections with Bang on a Can in a variety of ways stretching back to 2002, Chow did not become pianist of the All-Stars until after Perich's commission from the group. While aware of and friendly with each other as prominent members of the New Music Community in New York, *Surface Image* is the first time that Perich and Chow have directly collaborated on a project.

Vicky Chow is known for her virtuosic, new music-oriented technique. The Bang on a Can All-Stars are celebrated performers of contemporary music and are especially noted for their interpretation of Minimalist and post-Minimalist styles, which often involve works that require virtuosic techniques based in the Minimalist tradition that share points of similarity with Perich's general approach to piano writing. Chow has also developed a reputation as a soloist of contemporary repertoire, including a number of ambitious projects like creating and performing a staggeringly virtuosic arrangement of Stravinsky's *Rite of Spring* for solo piano and releasing a recording of Michael Gordon's notoriously difficult *Sonata*.²⁶³ When she discusses Perich writing material that "was able to push and challenge my virtuosity as a performer," the implications are profound. It is unsurprising then, that, in total, the piano writing in *Surface Image* represents the largest-scale challenge of any solo keyboard work in Perich's canon. Perich has often favored virtuosic-oriented writing in solo keyboard works (with or without electronics),

²⁶³ On the Cantaloupe label, 2017.

and the *Surface Image* commission provided him with both a broad canvas and the generously collaborative spirit of its virtuosic commissioner.

In Perich's own estimation, Chow was integral to the work's conception:

Vicky was ... part of this piece from the very beginning. That kind of set the piece in motion. It was really, like, knowing that I was writing a piece for Vicky that... made this what it is.²⁶⁴

This is a compelling statement. Perich is a skillful pianist and has often performed his own keyboard works, even when they are technically challenging or on a large scale.²⁶⁵ He also often uses improvisation at the piano as a part of his compositional process. In these ways, it is reasonable to assume that Perich's keyboard writing has generally been influenced by his own keyboard playing, either emerging organically from improvisation or being written in ways that make sense based on his own personal technique at the instrument. In *Surface Image*, Perich places this dynamic to the side, integrating Chow's pianism into the work from the outset. In some ways, Perich found this to be a liberating process:

Even though piano is my own instrument, I think there was always this kind of disconnect between what I could play myself in an improvisational sense versus what I could get on paper versus what I could actually perform myself, and so I could never really write the music that I wanted to and ... so Vicky solved all of those problems just by being who she is.

²⁶⁴ Peter Ferry, "Perich - Interview on Vicky Chow (1/8)," YouTube Video, 1:28, February 28, 2016, https://www.youtube.com/watch?time_continue=82&v=Fm7eh04fm9E .

²⁶⁵ His national tour of *Dual Synthesis* is probably the most compelling example of this.

In this statement,²⁶⁶ Perich indicates that while his own skills as a performer and improviser have been important in his musical practice, there have been tensions between his technical abilities and the abstract musical ideas that he wanted to incorporate into his piano writing.²⁶⁷ Chow has also commented on this collaborative spirit:

With him being also a pianist, he understood the capabilities of the instrument extremely well and was able to push and challenge my virtuosity as a performer. One of the satisfying and rewarding things about working with a composer is that they understand who you are as a performing artist and they can incorporate and write things that will push me and highlight my strengths and abilities on the instrument.²⁶⁸

It is interesting to note that while Perich describes their collaboration primarily as a means of allowing him to incorporate technical elements that he had previously been interested in but unable to fully explore because of his own limits as a pianist, Chow defines the relationship as one in which Perich expertly tailors his keyboard writing to

²⁶⁶ Ferry, "Perich - Interview on Vicky Chow."

²⁶⁷ This tension can also be observed in Perich's revision of *Dual Synthesis*, in collaboration with harpsichordist Daniel Walden.

²⁶⁸ Lauren McNee, "Surface Image: Interview with Vicky Chow," *The SPCO's Liquid Music* (blog), March 3, 2016, <http://www.liquidmusic.org/blog/chowinterview> .

suit her strengths as a pianist. While these subjective descriptions do not match up exactly, they do indicate a strong meeting of the minds between these two musicians. Chow's strengths as a performer seem to overlap with Perich's wish to explore beyond the limits of his own technical abilities. This is something that Chow has also suggested:

Tristan was aware of the things that I could do really well and he went that route when proceeding with writing *Surface Image*. I think it also helps that his pianistic interests kind of line up with what I also like doing and do well.²⁶⁹

While extreme endurance has been discussed as a virtuosic technique in other keyboard works by Perich, it is taken to new levels of extremity here. With the exception of four multi-measure rests and the contrasting final section, the pianist is effectively playing constantly throughout the entire work, which has a duration of over one hour. The first measure of rest for the pianist is not until the 323rd measure of the piece. Much of the writing in these long sections without rest contains material that enhances the demands on physical endurance, whether through the use of repeated notes/ chords, tremolos, or extremely fast passagework. While the physical challenges of long periods of constant thirty-second notes at a fast tempo was discussed at length in the context of *Dual Synthesis*, this challenge appears again in *Surface Image* in an extremely virtuosic passage of ceaseless thirty-second notes from measures 333 to 545 (see figure 15). It is interesting to note that the tempo marking for this material in both pieces is identical: thirty-second notes at quarter note equals one hundred beats per

²⁶⁹ McNee, "Surface Image: Interview with Vicky Chow," *The SPCO's Liquid Music* (blog).

minute. While this challenging texture forms the basis of all of *Dual Synthesis*, its use in *Surface Image* is limited to one section, highlighting the more epic and varied scale of the later piece.

333

334

L L L R R R R R L L L L R L L L R R R R L L L R R R R L L R L

335

336

L L R L R L L R R R R L L L R L L R R R R L L L R R R R L L R L L L

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L L R

371

372

Figure 15. *Surface Image* (2013), measure 333-372.

Many elements of the virtuosic piano writing in this work have clear precedents in Perich's other keyboard works. There are some elements of the piano writing, however, that are less directly connected to approaches he has used previously. Some of these elements may be more well-suited to a work like *Surface Image* due to its massive scale, while others may be more closely tailored to Chow's technical proclivities (as opposed to Perich's). As most of Perich's other virtuosic works for keyboard instruments have been on a smaller scale or have been based on his own technical capabilities at the instrument, *Surface Image* provided a different context in which to explore new types of piano writing.

The piece opens with piano alone playing overlapping chords in right and left hand in a regular rhythmic pattern that shifts emphasis easily between the two hands and gradually becomes more complex, both rhythmically and harmonically, as the one-bit electronics enter over time (see figure 16). This method of using hocketed chords in a piano part to establish a sense of regular pulse and composite harmony is a technique that is used not infrequently in Minimalist and post-Minimalist music. Perhaps most prominently, it is a common element of many of Steve Reich's piano parts in later works such as *Three Tales* (2002) and *Double Sextet* (2013). While common in the work of other composers working in a Minimalist idiom, this has not been a prominent aspect of Perich's keyboard writing prior to this work. However, in *Surface Image*, this technique and variations on it serve as an important recurring compositional approach throughout various sections of the work.

Figure 16. *Surface Image*, measure 1-2.

When this technique is paired with sudden jumps in range, gradually covering a broad range of the instrument from measures 619 to 793 (see figure 17), the level of difficulty of this technique for the performer is greatly enhanced, but it serves the same core function of creating a sense of rhythmic drive and stable harmony.

Example of hocketed chord technique over extended range.

Figure 17. *Surface Image*, measure 709-710.

Beginning in measure 831 (see figure 18), Perich jettisons the hocketed patterns and employs consistent streams of repeated notes, which is a more common element in his keyboard writing, generally speaking, although the frequent addition and subtraction of voices that creates a sense of melodic motion is less familiar, and perhaps reflects at the piano a compositional approach that is more common when working with channels of electronic sound.



Figure 18. *Surface Image*, measure 831.

The long and extremely virtuosic section of thirty-second notes that begins in measure 333 really marks *Surface Image* as an overtly virtuosic work that is centered on a piano soloist (see figure 15). This is not a universal characteristic of Perich's virtuosic keyboard writing, which is not always presented in a soloistic light. *Surface Image* is really structured in many respects as a traditional piano concerto, in which a soloist and the "orchestra" — in this case, the forty channels of one-bit electronics — alternate between playing together and playing separately, with varying degrees of coordination between their parts over time. In a work like *Dual Synthesis*, while the harpsichord part is extremely virtuosic and there are moments in which the harpsichord plays alone, they are brief moments, and often feel like disorienting surprises;

overwhelmingly in that work, the electronics parts and the harpsichord part work in tight integration with each other and do not have the sort of varied relationship that is common in a traditional concerto context. Having forty separate channels of electronic sound (as opposed to four in *Dual Synthesis*) is also more relatable to the scale of a conventional orchestra. In an earlier work like *Five Architectures*, for example, while the relationship between the pianist and the one-bit electronic parts is varied and episodic over time, the three-part counterpoint of the electronics parts does not deliver a sense of scale that could emulate a concerto relationship.

If we are to conceive of *Surface Image* as a piano concerto, then the thirty-second note passage work beginning at measure 333 can certainly be thought of as having the flavor of a cadenza (see figure 15). The speed of this passagework, the unyielding nature of the constant thirty-second notes, the complexity of the patterned material, and the sharp disjunctions between varying patterns surely makes this passage some of the most difficult passagework ever written for the piano. These virtuosic elements exist to varying extents in other keyboard works by Perich, but this is the most clear example of him platforming them in an impressive, soloistic light. While Perich's notated scores are typically quite conventional and austere, with a minimum of notations outside of the notes themselves, in some of the difficult passages of *Surface Image*, he makes use of a series of markings to assist the performer. In this thirty-second note section beginning at measure 333, he uses the letters R and L to indicate which notes in the constant stream of thirty-second notes should be taken with which hand (see figure 15). If followed, this leads to a relatively ergonomic approach in which the hands retain a fixed hand position, when possible, and the fingers execute the notes

within those hand positions as the pattern unfurls.²⁷⁰ Perich also uses boxed numbers to indicate changes between patterns (see figure 15). These numbers indicate the number of notes in each pattern, but do not indicate the number of repetitions.²⁷¹ When a new pattern emerges, Perich also provides a suggested distribution between the hands using the R and L notation discussed above. Throughout this section he also uses noteheads of two different sizes, employing a larger notehead for each note that aligns with the four quarter note beats of each measure. This helps the performer keep track of time as they shift from one irregularly grouped pattern to another. Later in the work (see figure 17), Perich uses an inverted carat symbol to indicate changes in hand position. The use of these indications are certainly useful for the performer, but are also an uncommon element in Perich's broader keyboard work. This is, perhaps, a result of his close collaboration with Chow during the composition process of this work and/or an acknowledgement on his part of the extreme difficulty level of much of the piano writing in this piece.

In addition to exploring new approaches to piano technique in this work, Perich also employs one-bit electronics in ways that differ from most of his other electroacoustic works for solo keyboard instruments and one-bit electronics. A prominent example of this is the use of long sustained tones in the one-bit electronics parts. This is most apparent at the very end of the piece, in a high register, and in the repeated thirty-second notes section that begins in measure 831, in a low register. As has been previously discussed, Perich has rarely used long sustained electronic pitches

²⁷⁰ This is, perhaps, an indication of Perich's own approach to piano technique, with a focus on fixed hand positions creating a basis for very fast melodic motion.

²⁷¹ And sometimes repetitions are not of the complete pattern.

in works for keyboard instruments like piano and harpsichord that cannot produce long sustained notes themselves. When Perich has used long sustained electronic pitches in conjunction with keyboard instruments, it has tended to be with keyboard instruments that can sustain pitch, like the accordion in *Elevation Maps* and the organ in *I Am Not Without My Eyes Open*. As used here, the long sustained pitches essentially become drones. Instead of working in coordination with the one-bit electronics to create a unified sonic aesthetic (as is the case in *Elevation Maps*), in both cases here, the piano maintains a separate identity. This is reflective, more broadly, of the “concerto” relationship between the piano part and the forty channels of one-bit electronics that permeates the structure of *Surface Image* overall.

The final section of *Surface Image* (see figure 19) is a departure from the style of piano writing that dominates the rest of the piece, which generally establishes a strong sense of rhythm through some kind of steady pulse or patterned or repetitive element. It is also a departure from the type of keyboard writing that dominates most of Perich’s works for solo keyboard instrument. The lack of insistent pulse in the piano writing in this section makes a stark contrast with the piano writing in the rest of the work and is unusual for Perich’s piano writing in general. While the same phrase is repeated throughout the section, the lengthiness of the phrase and the long rests between melodic fragments make the repetitiveness less legible and less audibly Minimalist. To find other solo keyboard works that embrace these kinds of textures and a more traditional approach to the instrument,²⁷² one would have to go all the way back to some of his earliest works like *Silo* and *Translucent Null*. In these works, the influence of

²⁷² In other words, an approach that is not primarily an evolution of Minimalist piano technique, but more rooted in techniques that precede the emergence of Minimalism in music.

Minimalist keyboard technique is much less apparent and the overall approach to the piano can be thought of in a more Impressionistic vein. This marks a striking contrast with the rest of *Surface Image*, and is also a surprising element to see in a work from this stage of Perich's career.²⁷³

(The damper pedal is depressed in measure 972 and continues throughout the example in this figure.)

Figure 19. *Surface Image*, measure 1140-1169.

²⁷³ Another parallel might be drawn here between the final section of *Surface Image* and the slow section of *Duet* from measures 160 to 192.

In recent years, Perich has discussed his desire to write definitive works for specific instrumentations. At this point in his career, he is less interested in writing for the same instrumentation over and over again and more interested in taking on projects that manifest his singular vision of music for a given instrumentation. In recent years, his compositional work has reflected this outlook and his compositions have become both less frequent and more large-scale. While keyboard instruments clearly play a central role in Perich's musical life in a variety of ways and will very likely continue to do so in the future, it seems clear that *Surface Image* is a special, landmark work — one in which Perich attempts to create his ideal work for piano and one-bit electronics.

Postlude: Answering the Call

In the introduction to this dissertation, I recounted a personal story about Tristan's portable telephone project. While it surprised and charmed me when I encountered it in person, it was also often remarked on in media coverage of Perich at the time.²⁷⁴ In retrospect, it serves as a marker of a pivotal moment in Perich's career and highlights important components of Perich's trajectory as an artist. To begin with, this 2004-era phone project coincided with the crucial period when Perich was branching out into creative applications of technology (like *1-Bit Music*) and was also interfacing with communities of like-minded tinkerers, artists, and tastemakers in New York related to the Chiptune, Circuit Bending, Electroclash, dorkbot, and new music scenes. At the same time, it helped solidify his public persona as a cool new hybrid— a hacker/artist/musician. This idea was attractive to music writers, and pop culture and tech publications, as well as venues, curators, and cultural institutions that responded to the idea of a new image of “the artist” that seemed to reflect an arts scene and a broader society coming to terms with jarringly new technological and cultural realities. At the same time, this appealing “one-bit wonder”²⁷⁵ rhetoric also genuinely reflects Perich's deep-seated aesthetic philosophy and the hybrid creative practices that he continues to pursue. In many respects, the phone project marks a moment of cultural opening—Perich took the call, and he's been continuing the conversation ever since.

²⁷⁴ Tristan Perich (website), “Tristan Perich - Portable Telephone,” accessed March 21, 2019, <http://www.tristanperich.com/Art/Telephone/> .

²⁷⁵ Sandhu, “Tristan Perich: He's a One-Bit Wonder,” *Telegraph*.

In a similar vein, the generation of composers and musicians who built the New Music Community were presented with a series of openings amid the economic and social wreckage following September the 11th. In a gentrified, but not-yet-prohibitively expensive city, they set up new venues and institutions across New York. In a contemporary music field that had been cleared of the Uptown/Downtown divisions of yore, they took the baton from the post-Minimalist generation and erected a new, community-oriented structure for the composition, performance, recording, dissemination, and reception of new music. In light of changing audience patterns and the explosion of social media, they leveraged new methods of communication to present new music in a new light and to dramatically alter its position in the broader cultural field. In short, they also seized their moment to answer the call, and have kept right on talking.

In the future, more scholarly attention will surely be paid to both Tristan Perich and his music, as well as the New Music Community and the network of composers, performers, venues, organizations, and institutions of which it is constituted. The scope of this dissertation is nowhere near adequate to explore all of the extraordinary narratives that can be teased out of the New Music Community, the evolution of the field of contemporary music in the United States from the early 2000s to the present, or the full breadth of Perich's work as a composer, performer, sound artist, and visual artist. I hope that this dissertation spurs further investigation of all of these topics, and I look forward to the broadening discourse that the future surely holds.

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